TEKNILLINEN TIEDEKUNTA

LOCALIZATION OF MULTINATIONAL INDUSTRIAL INVESTMENT PROJECTS

Juha-Antti Rankinen

INDUSTRIAL ENGINEERING AND MANAGEMENT

Master's Thesis

November 2019

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ABSTRACT
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Abstract

Industrial investment projects are large undertakings that form a complex network of different stakeholders and organizations. Studies show that albeit the enormous research and effort given to these projects, a large number of them are considered failures on many measures, and often face considerable unforeseen complications and costs. More recent studies have asserted one cause for this to be the lack of local knowledge and misunderstanding the local project environment. This brings us to the topic of localization, or the efforts to manage the local context of projects. While the need for understanding the local context and localization has been showcased in literature a priori, in the context of industrial investment projects, the research is scattered, conceptual understanding of localization distributed, and definition of localization in the discourse vague.

The purpose of this study is to research what localization is in the context of multinational industrial investment projects. To support this purpose, the following research questions were chosen:

- How to define localization in the context of multinational industrial investment projects?
- What are the key elements of localization in multinational industrial investment projects?
- What are the key objectives of localization in multinational industrial investment projects?

To expand the conceptualization of localization in the context of industrial investment projects and to answer these research questions, literature review and empirical research were conducted. The literature review constructs a theoretical foundation for localization and forms a basis for empirical research. Empirical research was conducted to expand literature findings and to identify the key elements of localization. Combining the findings of literature review and empirical research, localization was defined, and its key objectives described. Localization was defined as "the management of activities carried out to establish an understanding of the local context and its pressures on industrial investment project, with an objective of decreasing uncertainty and identifying opportunities, and the means how these objectives will be accomplished."

The key elements of localization are the most important elements to be considered in managing multinational industrial investment projects. Eighteen key elements were identified from the vast spectrum of local elements found in case interviews.

The key objective of localization is to support the existing processes of the multinational industrial investment project. Localization was found not to be an independent process, but rather a tool or method to support stages of the industrial investment project. Key objectives and activities of localization are presented for each stage of industrial investment project.

The findings of this study expand the knowledge on the localization of multinational industrial projects by defining the localization, describing its elements, identifying the key elements of localization in industrial investment projects, and examining the key objectives of localization in the given context. This study contributes to the literature by defining and describing the localization of multinational industrial investment projects and gives managerial implications on how localization should be approached in practice of managing multinational industrial investment projects.

Additional Information

Key words: multinational industrial investment project, localization, localization process, elements of localization

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Tiivistelmä

Teolliset investointiprojektit ovat suuria hankkeita, jotka muodostavat monitahoisen sidosryhmäverkoston. Huolimatta tutkimuksen runsaudesta ja hankkeisiin panostuksesta, tilastot ja aikaisemmat tutkimukset osoittavat, että useat suuret teolliset investointiprojektit epäonnistuvat monilla tehokkuuden mittareilla, ja kohtaavat odottamattomia ongelmia ja kustannusylityksiä. Viimeaikainen tutkimus on osoittanut vähäisen projektiympäristön paikallisuuden tuntemuksen olevan yksi juurisyy näihin ongelmiin. Paikallisen kontekstin hallinnalla, eli lokalisaatiolla, pyritään selittämään ja ratkaisemaan näitä ongelmia. Vaikka paikallisen kontekstin hallinnan merkitystä ja lokalisaatiota on tutkittu aiemmin, on monikansallisten teollisten investointiprojektien kontekstissa aiempi tutkimus hajanaista, konseptuaalinen ymmärrys epäselvää sekä määrittelemätöntä.

Tämän tutkimuksen tavoite on selittää, mitä lokalisointi on monikansallisten teollisten investointiprojektien yhteydessä. Tukeakseen tätä tavoitetta, tutkimuskysymyksiksi valittiin seuraavat:

- Kuinka määritellä lokalisaatio monikansallisten teollisten investointiprojektien yhteydessä?
- Mitkä ovat lokalisaation keskeiset osatekijät monikansallisissa teollisissa investointiprojekteissa?
- Mitkä ovat lokalisaation keskeiset tavoitteet monikansallisissa teollisissa investointiprojekteissa?

Laajentaakseen lokalisaation käsitteellistämistä teollisten investointiprojektien yhteydessä ja vastatakseen näihin tutkimuskysymyksiin, kirjallisuuskatsaus ja empiirinen tutkimus suoritettiin. Kirjallisuuskatsaus muodostaa teoreettisen perustan lokalisaatiolle ja luo pohjan empiiriselle tutkimukselle. Empiirinen tutkimus suoritettiin laajentaakseen kirjallisuuden tutkimustuloksia ja tunnistaakseen lokalisaation keskeiset osatekijät monikansallisissa teollisissa investointiprojekteissa. Yhdistämällä aikaisemman kirjallisuuden tutkimustuloksia empiirisen tutkimuksen kanssa, määritelmä lokalisaatiolle luotiin ja lokalisaation keskeiset tavoitteet tunnistettiin. Lokalisaatio määriteltiin seuraavasti: ”niiden toimenpiteiden hallinta, joilla luodaan ymmärrys paikallisesta kontekstista ja sen vaikutuksista teolliseen investointiprojektiin, ja minkä tavoitteena on pyrkiä vähentämään epävarmuutta ja tunnistamaan mahdollisuudet, sekä menettelytavat, joilla nämä tavoitteet saavutetaan”.

Lokalisaation keskeiset osatekijät ovat tärkeimpiä osatekijöitä ottaa huomioon monikansallisten teollisten investointiprojektien hallinnassa. Kahdeksantoista keskeisintä lokalisaation osatekijää tunnistettiin empiirisessä tutkimuksessa järjestetyistä haastatteluista.

Lokalisaation keskeinen tavoite on tukea monikansallisen teollisen investointiprojektien eri vaiheita. Lokalisaatio ei ole itsenäinen prosessi, vaan ennemminkin menetelmä tai ajatusmaailma, joka tukee teollisen investointiprojektin eri vaiheita. Lokalisaation keskeiset tavoitteet esitettiin investointiprojektin eri vaiheissa.

Tämän tutkimuksen tulokset laajentavat käsitystä monikansallisten teollisten investointiprojektien lokalisoinnista määrittelemällä lokalisaatiota, kuvaamalla sen osatekijöitä, tunnistamalla teollisen investointiprojektin lokalisaation keskeiset osatekijät ja määrittelemällä lokalisaation keskeiset tavoitteet teollisissa investointiprojekteissa. Tämä tutkielma laajentaa käsitystä lokalisaatiosta määrittelemällä ja kuvaamalla sitä teollisten investointiprojektien kontekstissa ja antaa suosituksia, kuinka lokalisaatiota tulisi käsitellä monikansallisten teollisten investointiprojektien johtamisessa.

Muita tietoja

Avainsanat: monikansallinen teollinen investointiprojekti, lokalisaatio, lokalisaatioprosessi

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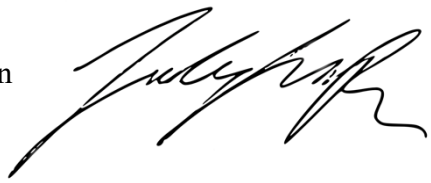
In Oulu, 12.11.2019 Juha-Antti Rankinen



CONTENTS

1 INTRODUCTION

1.1 Background

Industrial investment projects are long-term endeavours aiming to fill a market demand for future profits. The large investment projects are characterized by their complexity and uncertainties (Miller & Lessard 2001a), as the networks of organizations involved are often enormous, and technical capabilities required excessive. The sheer size of these projects naturally impacts socially and environmentally the location they are embedded in. This attracts the interests of external stakeholders be it local residents, regulatory agencies, or competing organizations. In cases of greenfield projects where the project is developed from a scratch (Johnson et al. 2008), the inspection of locale context is highlighted to decrease risks associated with uncertainty and unanticipated occurrences.

Even though a tremendous amount of research and development has focused on industrial investment projects, these large undertakings often tend to fail on many measures (Merrow 2011). Prior research has indicated a misunderstanding of local context to be one of the reasons for various problems occurring in these projects, resulting in reduced project performance. The root cause for this has been argued to be in differentiating local institutions and overlooking the importance of institutional knowledge in managing the localization of these large projects (Mahalingam & Levitt 2007a; Orr & Scott 2008; Javernick-Will & Levitt 2010).

While localization and its elements have been researched in literature a priori, the conceptualized understanding of localization in industrial investment projects is incoherent, and discourse scattered. Albeit localization is also existent in the practice of managing industrial investment projects, the conceptual definition and understanding of localization are rudimentary. From these findings, a research gap was identified, and research motives established. This thesis attempts to research what is localization, how it applies to the context of multinational industrial enterprises, and how the understanding of localization can be used to increase project performance in these large endeavours of global projects.

1.2 Research objectives and scope

The purpose of this study is to conceptualize the localization phenomenon in multinational industrial investment projects. Prior studies have shown importance of understanding local context in industrial investment projects, but the localization itself is not clearly defined or presented a priori. The goal of this thesis is to define and describe localization in industrial investment projects. The objective is to illustrate *what* localization is, *when* the localizing actions should be performed and *how*. While parts of localization are well executed and present in practice of managing industrial investment projects, the approach is often unsystematic and taken for granted. This study aims to contribute to the development and management of industrial projects by clarifying the process of localization and its sub-processes.

To be able to define and describe localization, literature review related to industrial investment projects and its local context is conducted and coupled with an empirical study focusing on identifying the key elements of localization. Besides industrial investment projects and local elements, literature review researches institutional theory, as institutions and institutional distance have been argued to be the fundament origin for varying local characteristics found in different project environments.

As this thesis contributes to an ongoing research project with a goal of developing new collaborative management methods for multinational industrial investment projects focusing on the project side of an industrial investment project, this study is scoped in a similar manner. The researched topics and localization process described is scoped to include project lifecycle beginning from the opportunity ideation and ending in finalizing the construction of a facility, leaving following phases of ramp up, production, maintenance, and eventual shutdown of a plant for further research.

The concluding object of this study is to both provide theoretical contributions by researching and conceptualizing localization phenomenon in the context of multinational industrial investment projects and to deliver managerial implications on how localization is applicable to the development and management of multinational industrial investment projects for the benefit of the project. Next, the research questions are presented and described.

RQ1. How to define localization in the context of multinational industrial investment projects?

The object is to define localization in the context of multinational industrial investment projects. A localization process is presented to characterize the definition. Prior studies related to industrial investment projects and their local project environment are researched to form a theoretical basis for localization. Institutional theory is examined as prior studies have shown the lack of institutional knowledge and misunderstanding of institutional differences to be one of the root causes for complications and difficulties industrial investment projects face in the local context. The literature review seeks to form a conceptualized overview of localization in a multinational industrial investment project context, and coupled with empirical findings, localization is defined, and the localization process described.

RQ2. What are the key elements of localization in multinational industrial investment projects?

The object is to find out what are the key elements of localization considering multinational industrial investment projects, to expand understanding of localization, and to contribute to describing of the localization process. Industrial investment project phases are further inspected and determined in research project's workshops, to agree upon and validate industrial investment project lifecycle and phases to be used for the conceptualization of the localization process in a multinational industrial investment project context. Interviews with organizations participating in various industrial investment projects are conducted to support literature findings on localization, to identify main elements of localization present in industrial investment projects, and to expand the definition of localization further. The empirical analysis is conducted to classify and categorise identified localization elements to find out and describe the key elements of localization.

RQ3. What are the key objectives of localization in different stages of multinational industrial investment projects?

The object is to identify what are the key objectives of localization in different stages of multinational industrial projects. Prior findings literature and empirical findings are used to identify key objectives of localization and the means of how these objectives are

achieved in different stages of the multinational industrial investment projects. The understanding of localization is attached to the industrial investment project lifecycle to compose chronological understanding of how localization affects to and should be considered in different parts of the industrial investment project. The aim is to contribute to the literature by expanding understanding of localization phenomenon in multinational industrial investment projects context and to give managerial implications on *what* localization is, *why* localization should be considered, and *when* localizing activities should be enacted in developing and managing of multinational industrial investment projects.

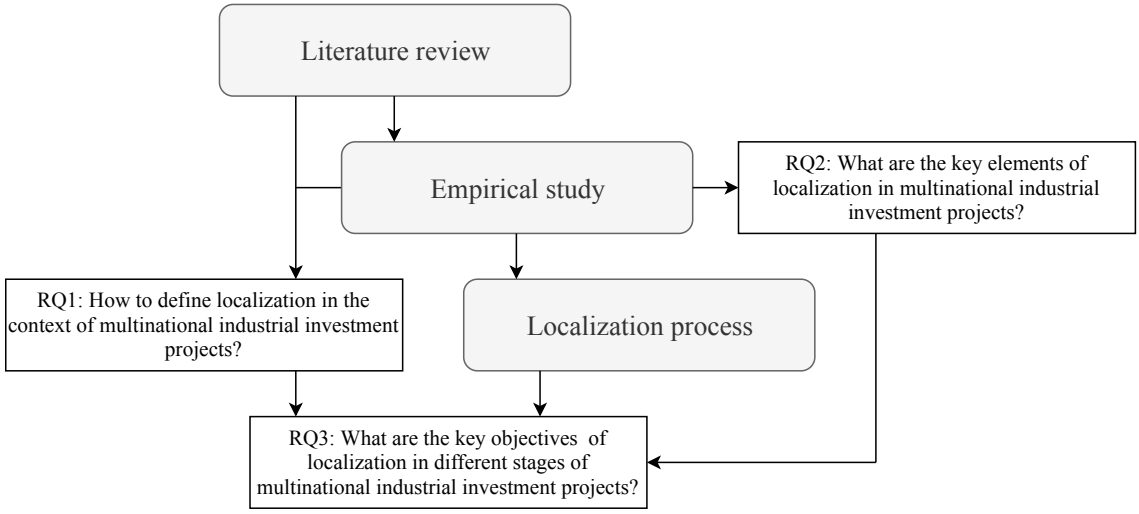


Figure 1. The research questions.

1.3 Research process

This research is a qualitative study consisting of background study, literature review, empirical data collection and analysis, and formation of conceptualized model and understanding of the research topic. The research process began with a background study aiming to form a basic understanding of localization and industrial investment projects. From the background study, a research gap was identified, the research objectives set, and research questions formed.

Background study gave basis and direction for literature review. From the background study, the foundational elements underlying localization and its applicability to industrial investment projects were identified. The literature review focuses on

researching these foundational elements of the industrial investment project and its local elements and how localization has been conceptualized in prior literature. As the previous research on localization in the context of multinational industrial investment projects was found to be scattered and vague, an empirical study was determined to be conducted to expand the understanding of localization in the given context. The literature review was conducted to find how localization has been conceptualized a priori and to form a theoretical foundation for an empirical study to be conducted.

The empirical study was conducted to validate and expand literature findings, and to give practical insights to theoretical findings. Empirical study consisted of workshop sessions, interviews, and analysis. The aim of the workshop sessions was to determine the industrial investment project lifecycle and define its sub-processes to be used in analysis and to enable inspection of localization in identified phases of an industrial investment project. Interviews were conducted to research what are the elements of localization present in industrial investment projects, and empirical analysis aimed to identify the key elements of localization in the industrial investment project context.

The literature findings of local characteristics present in industrial investment projects and prior conceptualization of localization in project context were then combined with empirical findings to define localization and conceptualize the localization process. The final goal is to expand the understanding of localization in industrial investment project context by defining localization and process and describing localization objectives and localizing actions in different phases of industrial investment projects.

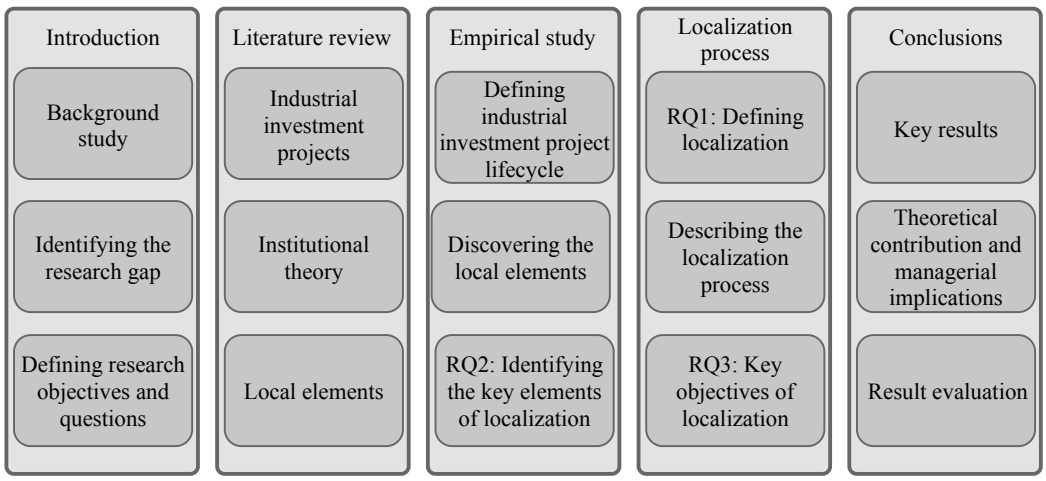


Figure 2. Research process.

2 LITERATURE REVIEW

This chapter reviews the literature and prior academic research on the localization of industrial investment projects. First, modelling and phasing of industrial investment projects are examined to establish a foundation and framework to allow inspection of localization matters in the context of industrial investment projects. Succeeding the examination of industrial investment project and its phases, a glance will be given to institutional theory, as prior research has shown an institutional-based approach to be a viable point of view for localization (Mahalingam & Levitt 2007a; Orr & Scott 2008; Javernick-Will & Levitt 2010). After establishing a theoretical basis with institutional theory, the literature review continues by examining how localization has been approached and inspected in research a priori. Lastly, a theoretical synthesis will be constructed to define, conceptualize, and summarize literature findings of localization in the context of multinational industrial investment projects. Figure 3 illustrates the literature review structure.

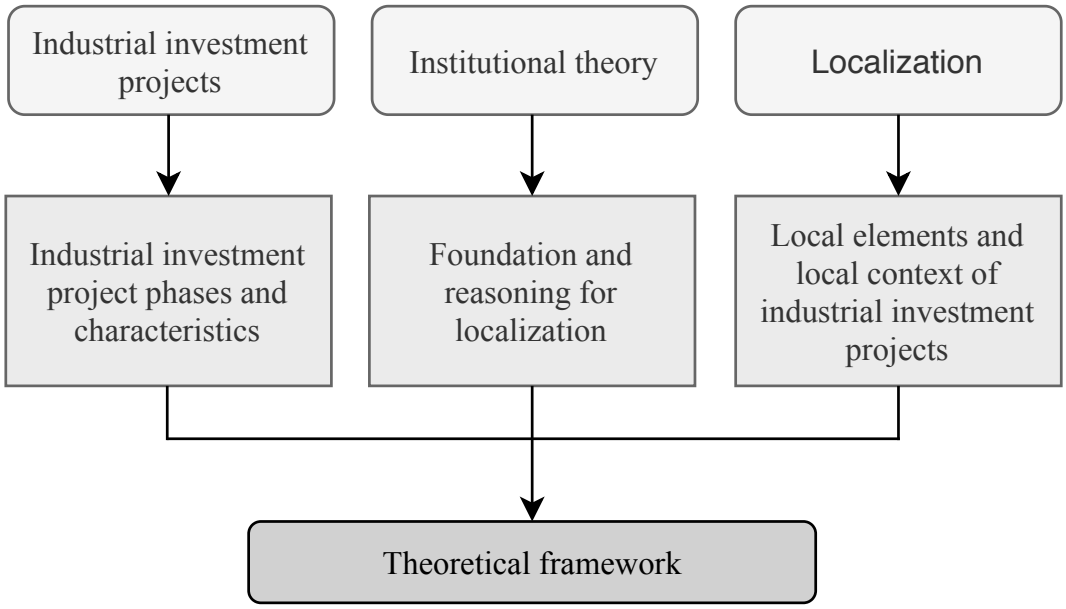


Figure 3. Literature review structure.

2.1 Industrial investment projects

Industrial investment projects are enormous undertakings with a goal to identify and fill market opportunity and demand for future projects. Typical to these projects, they require and involve extensive investments of capital and time. These large investment projects are characterized by their complexity and uncertainty (Miller & Lessard 2001a), as they involve a vast network of organizations and technical capabilities required redundant.

This chapter delves into the literature of large engineering projects and their phases. A general process model for industrial investment projects is laid out to allow the following chapters to clutch localization aspects into varying phases of industrial projects. Lastly, collaboration, multinational aspect and uncertainty, the underlying characteristics of large industrial projects, will be reviewed.

2.1.1 Industrial investment project phases

Industrial investment projects can be modelled in various ways (Munns & Bjeirmi 1996; Merrow 2011; Project Management Institute 2013; Kerzner 2017). While there exist many models for phasing industrial investment projects, and often the wordings change inter-organizationally or between the authors, on the highest level, they share the same foundational blocks. Table 1 displays the industrial project phase classifications presented by four authors.

Table 1. Phases of industrial projects, shaded phases are in the scope of this research.

(Munns & Bjeirmi 1996)	(Kerzner 2017)	(Merrow 2011)	(Project Management Institute 2013)
1. Conception	1. Planning	1. Appraise opportunity	1. Starting the project
2. Planning	2. Studies and basic engineering	2. Develop scope	2. Organizing and preparing
3. Production	3. Detail engineering	3. Define project	3. Carrying out the project work
4. Handover	4. Construction	4. Execute	4. Closing
5. Utilization	5. Commissioning	5. Start-up & operate	

The whole project life cycle of the industrial investment project will be split into three main categories for further inspection: development phase, implementation phase, and production phase. The development phase begins the project with the initial ideation of opportunity and ends in the final investment decision. The implementation phase consists mainly of the physical activities to construct the product producing plant or entity. The production phase starts with commissioning and ramp-up of the plant, finalizing in the establishment of operational capability, and eventually ending in the shutdown of operations. This classification includes the whole lifecycle of the large industrial entity and separates it into three main phases to allow more detailed inspection. As this study is scoped to the investment project side of an industrial facility, inspection focus is on the development and implementation phases of industrial investment projects, and sub-processes in the production phase are only briefly showcased in figure 5.

Development phase

The planning or development phase, which is the first of the three main project phases, begins in the initial conceptualization and ends in the making of the final investment decision, is in uttermost importance in large capital projects (Miller & Hobbs 2005). Although careful planning, evaluation, and decision-making of different proposals and aspects are time and resource consuming, the costs are often minor compared to alternative costs and efforts to make changes in later stages of the project (Engwall 2002). Development phase and its critical management also has a significant impact on the later phases of project and sub-processes of engineering, procurement and construction (Miller & Lessard 2001b; Miller & Hobbs 2005), as it forms a foundation for these further stages, emphasizing importance of early development and justifying invested time and resources to it.

Many different terms have been coined for the stages of the development phase in project management depending on authors, organizations, or industries they are used in. Common division to three separate stages of front-end development is subject to many of these categorizations (Turner 2009; Merrow 2011; Kerzner 2017). Stage-gated model is used to form objectives, investigate the feasibility, and to make the decision whether to advance to the next phase, revision plans, or kill the project (Kerzner 2017). The stage-gated model enables progressively increasing feasibility and planning accuracy

before investing too many resources to the project too early. Table 2 displays terminology used by different authors and industries in the development phase.

Table 2. Phases of front-end development.

FED1	FED2	FED3	Source
Appraise opportunity	Develop scope	Define project	(Merrow 2011)
Concept	Feasibility	Design	(Turner 2009)
Conceptual	Planning	Testing	(Kerzner 2017)
Appraise	Select	Front end engineering design	Oil and gas industry (Merrow 2011)
Business planning	Facilities planning	Execution planning	Chemicals industry (Merrow 2011)
Concept study	Prefeasibility study	Feasibility study	Minerals industry (Merrow 2011)

The first stage of the development phase focuses on ideation and appraisal of opportunity for the investment (Turner 2009; Merrow 2011; Kerzner 2017). Market research is conducted to confirm market demand for the investment project, and rough estimates and evaluations on costs, options, and project locations are created. Core project teams are formed and plan on the following phases until the point of final investment decision are created. The permitting processes are started to ensure the possibility of investment in a certain location.

The second stage, feasibility study, delves into more detailed planning, development, and estimates to ensure the feasibility of the investment project (Merrow 2011; Aapaoja et al. 2013). For the feasibility study phase, Behrens and Hawranek (1991) underline the importance of evaluating many aspects of location-specific environment. The feasibility study phase can be further split into the pre-feasibility study, feasibility study, and definitive feasibility study phases. As feasibility studies involve time and money, the principle behind this division is to move further into detail in each feasibility study phases and gate-check the project advancement in each step (Turner 2009; Merrow 2011). For example, a pre-feasibility study may target investment accuracy of over ±30 percent, while a feasibility study aims to ±20 percent accuracy and definitive feasibility study can have a goal of ±10 percent or better investment accuracy. Generally speaking,

feasibility studies research in increasing accuracy what could be done, how it should be done, and whether it is feasible or not to be done.

The last stage of front-end development finalises feasibility studies and begins early engineering work (Merrow 2011). In this part, the investment options have been narrowed down, and feasibility studies have been finished. This phase includes finalizing technical requirements, capital and operating expense estimates, and financial feasibility. A contracting strategy is devised, and tenders for sub-contractors and suppliers are established (Turner 2009). Once the early design work has been finished, approval from permitting governances is received, and if financial and general feasibility has been achieved, the final investment decision is made. The final investment decision ends the development phase and begins the implementation phase.

To summarize the development phase of the industrial investment project, each stage designs and develops the project proposal further and with more detail. In opportunity appraisal, market demand and opportunities are studied to generate proposals for business idea and project location. Following feasibility studies delve into more detail with financials and designs considering the project to understand the feasibility of the investment. The last phase before the final investment decision further examines designs and engineering to generate the most accurate approximates and budgets to help justify the investment decision. The stage-gated model is used to confirm feasibility in each stage before allocating more resources to the advancement of the project. Figure 4 illustrates the main tasks of the development phase.

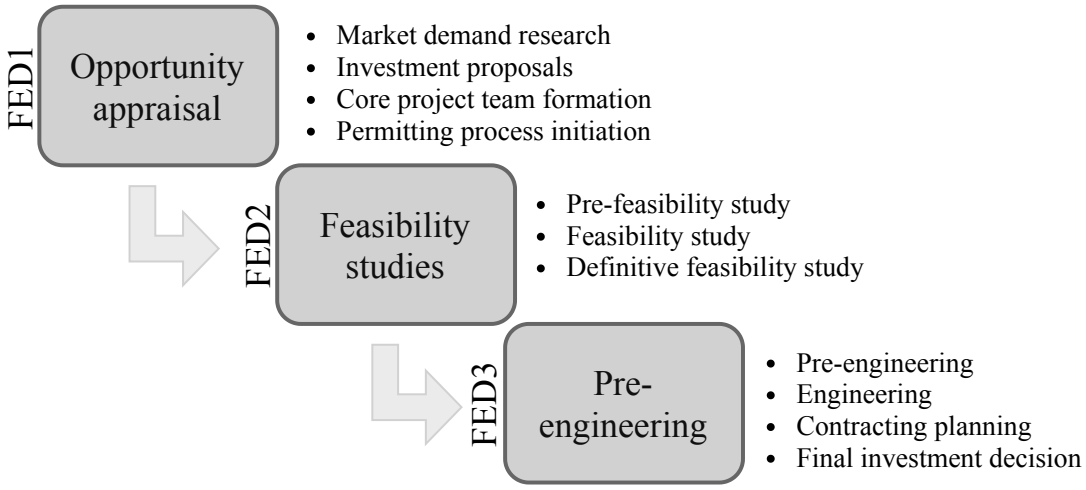


Figure 4. Development phase stages (modified from Turner 2009; Merrow 2011).

Implementation phase

Once the final investment decision is made, the project advances to the implementation phase. The implementation phase includes final engineering work, procurement of all project materials, sourcing of all remaining sub-contractors, and construction of the facility itself. The implementation phase consists of all work and effort after the initial development phase all the way to finalizing and finishing the construction of the industrial facility.

After the final investment decision has been approved, finalizing the tenders and contracting starts. In best-case scenarios, contracting matters can be brought to closure quickly after the investment decision, if pre-work for tenders, reviewing the potential contractors and suppliers have been completed and engineering designs finished. In contracting, it is important to have strategic plans and objectives for contracting to avoid failing to simply rank offers by lowest bids (Merrow 2011), as often enough, this leads to many difficulties and overlooking a more suitable and feasible option. On the whole project level, choosing the lowest bids tends to arise in complex problems further in the implementation phase, sacrificing quality for cost and resulting in additional costs for the project (Merrow 2011). Contracting plans need to also address the variations in lead-times of suppliers to avoid bottle-necking development of the project (Merrow 2011, p. 210-212). For this reason, ordering of major process equipment may be done even in the development phase before finalizing the investment decision.

Due to the large nature of industrial projects, careful planning and scheduling of all implementation activities are critical for successful implementation and construction of a project (Turner 2009). To be able to transform schedules and plans of activities into actions, clear and organized communication becomes an enabling success factor. Turner (2009, p. 58) also noted that poor communication does not always result from too little communication but may also arise from the presence of too much communication information.

Industrial investment project phases

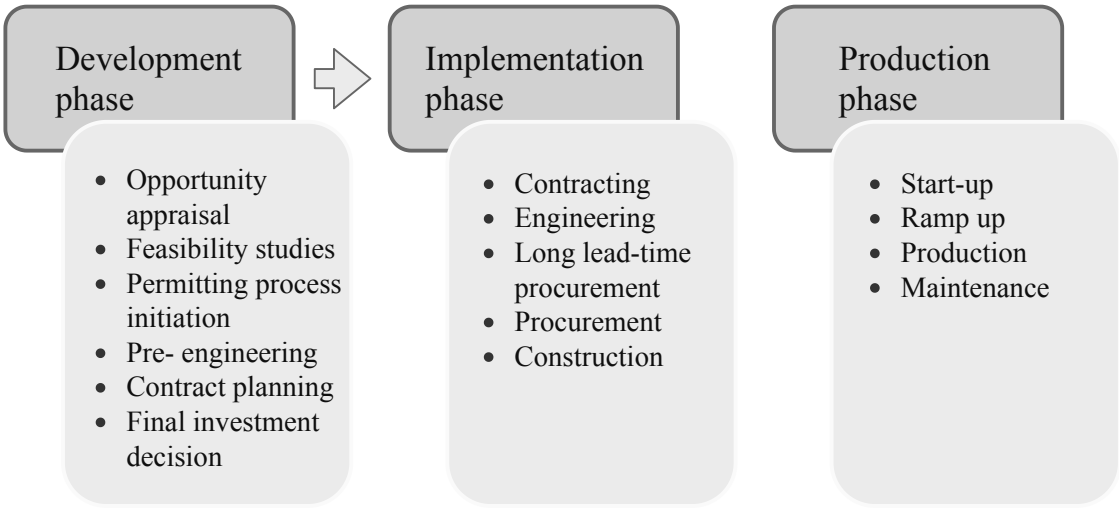


Figure 5. Phases of industrial investment project (modified from Turner 2009; Merrow 2011).

2.1.2 Characteristics of multinational industrial investment projects

This chapter briefly examines the three key characteristics of multinational investment projects. First, integration and collaborative aspect are examined, as large industrial investment projects tend to form complex networks of organizations consisting of hundreds of stakeholders. Succeeding collaboration, a brief description of uncertainty in these projects is given. Finally, the multinational aspect of industrial investment projects is described.

Integration and collaboration in industrial investment projects

Organizational sub-units tend to focus on own agendas, own goals, and sub-optimization (Ketokivi & Castaner 2004; Turkulainen & Ketokivi 2012; Aapaoja et al. 2013), which does not serve the best of the project and ultimately leads to the decreased value for the customer (Toolanen & Olofsson 2006). Due to large and complex networks of stakeholders established in industrial investment projects, the importance of integration is highlighted. Integration in project-based business is ultimately integrating project participants to work as one team with a common goal congruency to achieve better performance (Nam & Tatum 1992; Baiden et al. 2006).

Mitropoulos & Tatum (2000) divided factors affecting integration into the prevailing conditions, which create the need for integration and efforts to answer this integration need. The business environment, with its increased customer needs and increased competition, coupled with trends of increased uncertainty, increased complexity, and challenging schedules faced in a project, create the need for integration (Lawrence & Lorsch 1967; Van de Ven et al. 1976; Mitropoulos & Tatum 2000). Integration mechanisms are then used as tools to fill the gap between needed and actual prevailing integration (Mitropoulos & Tatum 2000). As integration processes to achieve higher integration level takes time and effort, needed level of integration should be aimed for, and organizations that are effective in integration management fit integration mechanisms to existing needs and requirements without over-integrating too much or under-integrating too little (Lawrence & Lorsch 1967; Turkulainen et al. 2015).

Integration mechanisms are tools and methods used to control uncertainty and complexity by increasing the level of integration (Mitropoulos & Tatum 2000). The integration literature consists of many classification frameworks for integration mechanisms (for example Galbraith 1974; Van de Ven et al. 1976; Mitropoulos & Tatum 2000). Van de Ven, with his colleagues (1976), divided integration mechanisms into formal and informal and then further into impersonal, personal, and group mechanisms. Another more recent and widely used framework for classifying integration mechanisms was proposed by Mitropoulos & Tatum (2000), categorizing integration mechanisms to contractual, organizational, and technological mechanisms.

Contractual mechanisms are formal, inter-organizational mechanisms with the aim to integrate different organizational parties together (Mitropoulos & Tatum 2000). These mechanisms can be in forms of incentives, plans, rules, or common goals. Incentives as a mechanism for integration should be targeted at collective rather than individual level, to shift the focus from sub-goals and sub-optimization to organizational wide aspects (Ross 1973).

Organizational mechanisms can be considered as the backbone for integration, as the whole point of integration can be explained as an inter-organizational team effort. These mechanisms integrate people and teams through guidelines, structures, and informal interactions in the form of matrix structure, cross-functional teams, and workshop sessions, to name a few (Mitropoulos & Tatum 2000). Early involvement of key project

participants to form cross-functional teams is a strong organizational integration mechanism (Mitropoulos & Tatum 2000).

Technological integration mechanisms are standardized information technologies, interfaces, and systems used to aid organizational mechanisms (Mitropoulos & Tatum 2000). Technological integration emphasizes the standardization of systems, as different systems in-use inter-organizationally vary widely, and the fragmentation of systems and data decreases project efficiency (Howard et al. 1989).

Risks, unforeseen costs and uncertainty

Large industrial investment projects are characterized by risks, and uncertainty, inducing unforeseen costs and other complications (Miller & Lessard 2001a). For this very reason, the importance of risk management is paramount during large industrial investment projects. Turner (2009) highlights the emphasis on controlled, strategic risk management process consisting of identification of risks, qualitative assessment of the identified risks, prioritization of the risks, quantitative analysis of the risks, mitigation of the risks, and controlling of the risk management process. In other words, not only should risks be identified, but also carefully assessed, evaluated, and mitigative plans constructed.

Multinational characteristic of industrial investment projects

Projects can be characterized multinational when there are participants from two or more national backgrounds. This is often the case with large industrial projects, where all project resources, heavy process equipment providers for example, cannot be or is not feasible to be procured within a single country. This creates a multinational atmosphere for the project environment, consisting of actors and organizations with various norms, backgrounds, practices, and native languages.

Cultural differences in international projects give raise and contribute to disputes in international projects, and project participants with different cultural backgrounds tend to have different attitudes towards dispute resolution process (Chan & Tse 2003). In cases where disputes between participants are not properly managed, they effectively increase project costs, cause project delays, cripple team spirit, and pollute business relationships (Cheung & Suen 2002). In Chan and Tse's (2003) survey about international construction projects, the cultural clash among involved parties ranked as

the most important factor contributing to disputes in international projects. Thus, for the context of multinational industrial investment projects and localization, institutional differences need to be researched next.

2.2 Institutional-based approach

During the development and implementation, large engineering projects form a highly complex network of project participants with varying work ethics, best practices, and institutional backgrounds. Well-developed and established institutional arrangements – such as laws, regulations, and common practices form a structure for projects to take off and succeed (Miller & Lessard 2000). For these reasons, institutional theory and institutional elements of such projects are investigated to form a theoretical foundation for localization.

Traditionally two perspectives had been perceived as drivers for international business strategy: an industry-based view and a resource-based view (Xu & Shenkar 2002: Peng et al. 2008). In the industry-based view, it is argued that the conditions within the specific industry determine a firm's strategy and performance (Porter 1980). A resource-based view of strategic management (Wernerfelt 1984; Barney 1991) proposes that it is firm-specific differences, resources, and competencies that drive strategy and performance. Studies regarding project-based organizations have been dominated by contingency-based or resource-based approaches (Scott 2011). While these approaches provide important insights, they often enough overlook institutional aspects as taken for granted, and formal and informal institutions have been recognized only as "background" conditions and left in lesser importance (Peng et al. 2008), or importance has only been given for regulative institutions (Scott 2012).

More recently, especially in the context of emerging economies and international projects where institutions differ significantly, the institutional-based view has gained ground in shaping the strategy and performance of firms (Hoskisson et al 2000; Weight et al. 2005). Insufficiency of seeing institutions only as a background actor in developed market areas has been argued (Oliver 1997; Ingram & Silverman 2000; Lewin & Kim 2004), and it becomes strikingly significant when probing into emerging economies or large global projects (Narayanan & Fahey 2005). Many prior studies indicate that the difficulties faced in multinational projects arise from institutional differences present in

these projects. (Mahalingam & Levitt 2007a; Orr & Scott 2008; Javernick-Will & Levitt 2010).

Recent research implies institutional theory to be a convenient framework in analysing differences encountered in international projects (Mahalingam & Levitt 2007a; Orr & Scott 2008; Javernick-Will & Levitt 2010). Grant (1996) argues knowledge to be the most important resource of the firm, and that institutional knowledge as a part of it brings a valuable completive advantage. Different project locations have particular institutions – regulations, norms, and culture-cognitive assumptions – which the project needs to understand and adapt to achieve local legitimacy for the project and succeed (Scott & Javernick-Will 2010; Scott 2014). This chapter briefly reviews institutional theory and explains how it connects to the localization of large multinational projects.

2.2.1 Institutional theory

Early institutional theorists emphasized the taken-for-granted nature of institutional rules and beliefs that establish the shared social reality which guides organizations' actions and instils them with value and social meaning (Selznick 1949; Selznick 1957; Berger & Luckmann 1967). Later insights on institutionalization further explained the essence and range of institutions and institutional processes (Meyer & Rowan 1977; Zucker 1977; DiMaggio & Powell 1983), their influence and characteristic on organizational structures (Meyer 1980; Meyer et al. 1987; Scott 1987), how they change organizations (Tolbert & Zucker 1983) and organizations' response strategies on external institutional pressures (Oliver 1991).

Meyer and Rowan (1977) identified institutions as social processes, obligations, and actualities that have established rule-like status in social thought and action. Such institutionalized rules are either taken for granted or legitimized by public support or force of law (Starbuck 1976). Organization adapting these societally legitimized structures increase their legitimacy and survivability, while organizations deviating from these rationalized and legitimized structures tend to fail (Meyer & Rowan 1977).

DiMaggio and Powell (1983) contributed to the institutional theory with institutional isomorphism, which explains how coercive, mimetic, and normative isomorphism drive organizations toward homogeneity to meet social expectations. Formal and informal pressures put upon organizations promote certain behaviours, mimetic explains how

best practices are essentially copied across organizations and organizational fields, and finally normative concept talks how organizations need to act like others in the certain field because of social and cultural pressures (DiMaggio & Powell 1983; Davis 1991; Palmer et al. 1993).

Partly challenging the earlier views on organizations' need of compliance with institutional pressures, Oliver (1991) identified strategic responses that organizations deploy to not only meet and accept certain institutional constraints but also avoid or even defy these external pressures. Oliver's (1991) work on strategic responses signified emphasis given to institutional theory in strategic decision making and management.

Still, there exists only a little consensus on institutional theory (Tolbert & Zucker 1999). To scope the vast aspects of institutional theory for the context of localization and multinational industrial investment projects for this research project, we take a closer inspection on Scott's (1995) take on institutions, followed by investigating Oliver's (1991) work on strategic responses to institutional pressures to connect institutional theory with project-based business management and the topic of localization

Three pillars of institutional theory

Scott (1995, p. 33; 2001, p. 48) postulated the idea that institutions are composed of regulative, normative, and cultural-cognitive elements. This separation is helpful for analytic purposes to sort numerous institutional elements. Peng and Heath (1996) noted that in situations and environments where formal regulative elements are weaker, informal institutions start to play a bigger role in driving firms' strategies and performance. This often applies to less-developed market environments and developing countries (Narayanan & Fahey 2005).

Regulative elements of institutions are formal laws, rules, constitutions, and property rights that promote certain behaviours and restrict others (North 1990; Kostova 1997a; Scott 2014). Regulative institutions use legal sanctioning as the basis of legitimacy (Xu & Shenkar 2002). While these elements have a strong impact on large engineering projects and the regulative elements vary a lot between countries or regions, they are usually transparent and easily identifiable. Examples of regulative elements in the local context of industrial investment projects include all local laws and permitting policies

such as contract law, business law, employment law, health and safety law, and environmental protection law (Turner 2009).

The normative pillar includes values and norms (Scott 2014; Orr & Scott 2008). Values are conceptions of what is preferred or desired (e.g., making a profit), and norms specify how they should be pursued (e.g., conceptions of fair business practices). Normative elements include social norms, values, goals, beliefs, standards, roles, practices, and traditions that are shared and carried out by individuals and guide interaction and decision-making by promoting the "correct" way of behaviour (North 1990; Kostova 1997a; Cambell 2004; Scott 2014 p. 56-84). As such, they influence individual and organizational actions even in the absence of legal sanctions or incentives (Trevino et al. 2008). The legitimacy for the normative pillar is rooted in societal norms and beliefs (Scott 1995, p. 45).

The cultural-cognitive pillar consists of cognitive structures and social knowledge shared by people in a given location or culture (Kostova 1997a). North (1990) acknowledged cultural-cognitive institutions as "mechanisms of the mind". These elements are perceptions which individuals and organizations consider typical and are often taken for granted (Kostova 1997a; Scott 2014). Some cultural-cognitive elements provide typical ways to construct organizations or project teams, divide labour, and create routines for conducting work (Greenwood & Hinings 1993; Whitley 2004).

It should be noted that classifying institutions into regulative, normative, and culture-cognitive elements is an analytical distinction. In real-world cases, these are found in complex combinations that indicate and affect each other (Javernick-Will 2009). In all human systems, tacit beliefs underlie and are influenced by informal norms, and informal norms give ascent to and are developed by formal rule formation and maintenance (Giddens 1979; North 1990; Greif 1994).

Table 3. Three pillars of institutions (modified from Scott 1995; Palthe 2014).

	Regulative	Normative	Cultural-cognitive
Basis of legitimacy	Legal systems	Moral systems	Culturally supported
Basis of compliance	Expedience	Social obligation	Taken for granted
Legitimacy reasoning	Have to	Ought to	Want to
Example	Rules, policies, and laws	Work roles, habits, and norms	Values, beliefs, and assumptions

2.2.2 Institutional pressures and strategic responses

Oliver (1991) hypothesized and compiled different response strategies firms use with external institutional processes and pressures. Depending on the saliency of pressures faced and perceived, organizations enact responses to external pressures. She proposed five types of response strategies how firms interact with these pressures: acquiesce, compromise, avoid, defy, and manipulate.

Acquiesce strategy as a response to institutional processes is straightforward complying with pressures formed by the institutional environment. It consists of forms of habit, imitate, and comply tactics (Oliver 1991). *Habit* refers to unconscious obedience to tacit rules and values prevailing in the institutional environment. This approach can be seen as the least strategic choice, as conformity to the institutional processes happens practically unconsciously without giving a greater thought or evaluation to response possibilities. *Imitation* follows the concept of mimetic institutional isomorphism (DiMaggio & Powell 1983). It exhibits a conscious or unconscious mimicry of prevailing institutions and institutional models (Oliver 1991). For example, an organization may mimic the responses or conventions from existing, successful organizations or mimic the institutional practices and hence acquiesce with the abound institutional environment. *Compliancy* can be seen as the most active acquiesce response tactic comparing to habit and imitation. Compliance is incorporation and obedience of institutional requirements, values, and rules the environment instils upon the organization (Oliver 1991). Firms choose to comply with institutional requirements and pressures in the hope of gainining social support, legitimacy, or other resources (DiMaggio 1988; Pfeffer & Salancik 2003).

The second strategical categorization in Oliver's (1991) response strategies is compromise. Albeit organizations tend to find enhanced legitimacy favourable, acquiesce accommodation of institutional pressures is oftentimes demanding. Institutional demands may be conflicting among each other, or institutional expectations laid upon organization may disturb a firm's internal objectives and agenda. In these cases, firms may choose to respond with balancing, pacifying, and bargaining tactics (Oliver 1991). *Balancing* refers to tactical and strategic thought and action exhibited on conflicting institutional pressures, processes, and own interests. Multiple external pressures may be in conflict with each other's, requiring stabilizing actions to achieve parity among institutional demands. *Pacifying* occurs when an organization enthrals minor resistance and aims to placate the institutional pressure. For example, when the institutional demand makes an effort to reject a project due to environmental impact, the organization may choose to try and modify the ecological aspects of the project to fit the institutional expectations. *Bargaining* is the most active form of compromising response strategies (Oliver 1991). The basis for involving bargaining tactics in the institutional setting is the presumption that institutional demands and requirements are negotiable. For example, in case of large and complex policies or newly installed requirements, the organization may try to negotiate with governmental agencies or other institutional entities to reduce the extent of the requirement.

Avoidance strategy is the organizational attempt to exclude itself from the necessity of conformity to institutional demands by concealing its nonconformity to institutional pressures, buffering itself from institutional demands or escaping the institutional expectations and rules (Oliver 1991). *Concealment* tactic can be differentiated from acquiesce approach in the degree of how real and apparent the conformity to institutions is. Where in acquiesce the conformity and intentions can be seen as real, concealment tactic makes an effort to make it only seem so. For example, as governmental regulatory inspections are anticipated, a variety of expected actions may be displayed even though they might not be part of the organization's normal routines. From the institutional perspective, the appearance of conformity, rather than real conformity, is often sufficient for the acquirement of legitimacy, making concealment a viable strategic response (Scott 1983). *Buffering* is the organizational attempt to exclude itself from the external inspections, evaluations, or other kinds of demands externally put upon it by isolating and decoupling organizational activities from external contact (Pfeffer & Salancik 2003). Where this is applicable, it serves the organization by preserving

autonomy and minimizing external interference. *Escape* tactic is the most dramatic of the three avoidance strategies. In it, the organization alters its own goals and activities to escape the institutional demands. This may be, for example, due to too strict evaluations and requirements. It is one approach to dodge and bypass the necessity of conforming to institutional demands.

The fourth strategic classification on Oliver's (1991) responses is defiance. Defiance is more of an active form of resistance to institutional pressures, and comparing to the former acquiesce, compromise and avoidance strategies, serves as an explicit form of rejection to institutional norms and processes. It consists of dismissal, challenge, and attack tactics, each carrying increasingly more active resistance than the former. Organizations may choose to *dismiss* institutional pressures put upon them if the external enforcement of these pressures is perceived inadequate, or if the interests of institutions diverge vastly with internal ambitions. Another reason for choosing a dismissal approach might be if the impact of possible sanctions is perceived to be lower than the cost of conformity of these pressures and demands. *Challenging* is another tactic in Oliver's (1991) defiance categorization, a more active form of opposition and resistance than dismissal. Challenging usually happens when the organization is strictly confronted with external pressures, whose rationalization for the reasons behind them the organization cannot comprehend, and the organization will rather try and rationalize its own point-of-view on the situation (Oliver 1991). Just as activists go on to challenge prevailing laws, organizations may find pressures absurd and not rationalized and choose to challenge them demonstratively, by example offering their own rationalization and alternatives. When an organization finds the perceived cost of active departure from institutional settings low, regards its internal interests highly diverging from the institutional expectations or believes in its own ability to demonstrate the rationality of alternative solutions, they may choose to confront hostile institutional pressures with *attacking* tactic. This is distinguished with its high aggressiveness and proactiveness from other forms of defiance tactics. Likelihood of choosing attack approach increases when the institutional demands are considered organization-specific. For example, a strategic response to increasing public criticism towards an organization's operations represented by media could be attacking the media and its representation of public opinion. These tactics are chosen when the organization perceives its rights and autonomy to be in severe endangerment.

The fifth and the last strategic option in Oliver's (1991) list of response strategies is manipulation. While acquiesce, compromise, avoidance and defiance strategies generally involve an increasing amount of resistance to institutional pressures, manipulation takes the most active form of response as it attempts to change and transform institutional pressures in forms of co-opting, influencing and controlling, instead of simply conforming or rejecting to the pressures (Oliver 1991). *Co-optation* is the neutralization of institutional pressure by absorbing and assimilating the source of the pressure. The organization may attempt to convince and persuade the institutional entity to join the organization. For example, Selznick's (1949) found in his study how outside interests had been co-opted and reconstructed to support the organization's projects attain legitimacy. In other words, the pressures put upon the focal organization are neutralized by teaming up with the source of the pressures. *Influence* tactics tend to try and manipulate institutional values and belief systems (Oliver 1991). One common example of an influence tactic is lobbying. For example, organizations or trade associations may choose to lobby government officials in order to make changes to institutional rules. Lobbying can aim to affect both strictly enforced rules, regulations, and laws, or more loosely defined public opinions or perceptions. *Control* is the most active and hostile form of manipulation tactics as its goal is to institute dominance and establish control over external institutional actors, rather than co-opt or barely influence them (Oliver 1991). The likelihood for the use of controlling tactics increases when the institutional expectations are still evolving, localized, infirmly advocated, and generally in a smaller scale, for example, when the institutional expectations are promoted by small advocacy groups rather than large institutional organizations. Table 3 below summarizes the response strategies organizations enact against institutional pressures as Oliver (1991) proposed.

Table 4. Strategic responses to institutional pressures (modified from Oliver 1991)

Response strategy	Tactics	Example
Acquiesce	Habit	Habiting taken-for-granted norms into own activities
	Imitate	Imitating existing institutional patterns
	Comply	Adhering to institutional rules and norms
Compromise	Balance	Balancing own and multiple constituents' interests
	Pacify	Pacifying the origin and reasoning of the pressure
	Bargain	Negotiating with sources of institutional pressures
Avoidance	Conceal	Disguising the presented nonconformity
	Buffer	Detaching institutional attachments
	Escape	Escaping institutional pressures by changing own goals
Defiance	Dismiss	Explicitly ignore rules, norms, and values
	Challenge	Confront and contest rules and regulations
	Attack	Confront and contest the source of institutional pressure
Manipulation	Co-opt	Uniting institutional stakeholders with the organization
	Influence	Modifying institutional contents and expectations
	Control	Dictating institutional processes and sources of pressure

Aaltonen and Sivonen (2009) further continued Oliver's response strategies framework by analysing five case projects and examining response strategies these project organizations presented against institutional pressures. They noted in their case study how strategic responses and attitudes toward external pressure might change and develop during the project, indicating the changing aspect of the response. For example, in one of the projects studied, the project organization at the beginning took a dismissal approach on the external stakeholders, but as they gained more power and legitimacy for their pressures, the project organization took a more compromising approach to meet external stakeholder's agenda. In other words, the strategic response composed against these pressures is not always a once made decision, but rather may live and develop during the project.

The characteristics of institutional pressures affect the response strategies organizations choose to respond to them. Oliver (1991) hypothesized predictive dimensions of institutional processes and attributes of the institutional environment to be able to anticipate whether the organization's response to prevailing institutional pressures will

be conforming or resisting. The table below lists proposed institutional antecedents and their correlation to the degree of resistance of the strategic response to the institutional pressures (Oliver 1991).

Table 5. Predictive constituents to a degree of resistance (modified from Oliver 1991)

Predictive constituent	Correlation to resistance
The degree of social legitimacy perceived to be attainable through conformity to institutional pressures	The lower the degree of perceived attainable legitimacy with conformity, the higher the likelihood of organizational resistance
The degree of economic gain perceived to be attainable through conformity to institutional pressures	The lower the degree of perceived attainable economic gain with conformity, the higher the likelihood of organizational resistance
The degree of institutional constituent multiplicity	The greater the multiplicity of institutions or institutional pressures, the higher the likelihood of organizational resistance
The degree of external dependence on pressuring constituents	The lower the degree of external dependence, the higher the likelihood of organizational resistance
The degree of coherence between institutional requirements and the organization's goals	The lower the degree of coherence, the higher the likelihood of organizational resistance
The degree of discretionary constraints established by institutional pressures upon the organization	The greater the degree of constraints established, the higher the likelihood of organizational resistance
The degree of legal tension underlying institutional regulations	The lower the degree of legal tension or enforcement, the higher the likelihood of organizational resistance
The degree of voluntary diffusion of institutional elements	The greater the degree of voluntary diffusion, the higher the likelihood of organizational resistance
The degree of perceived uncertainty in the organization's environment	The lower the perceived uncertainty, the higher the likelihood of organizational resistance
The degree of interconnectedness in the institutional environment	The lower the degree of interconnectedness, i.e. amount of inter-organizational relations, the higher the likelihood of organizational resistance

2.2.3 Institutional ignorance

Scholars have noted the additional costs of doing business abroad, arguing that entrant companies face the liability of foreignness in host countries (Zaheer 1995; Zaheer & Mosakowski 1997; Kostova & Zaheer 1999). Zaheer (1995) defined the liability of

foreignness as all additional costs multinational enterprises face while doing business abroad that local firms found not face. She argued that these costs arise from four sources: costs associated with spatial distance, costs associated with the firm's unfamiliarity or lack of local knowledge, host country's environment, and home country's environment. For companies' expansion to the foreign environments to be feasible, the benefit achieved needs to surpass the liabilities of foreignness. The gain attained can be in the forms of new market opportunities or economical resources. To increase the difference between perceived benefits and liabilities of a foreign environment, and therefore the feasibility of expansion, companies can decrease the liability of foreignness in several ways.

Institutional distance (Kostova & Zaheer 1999; Kostova 1999) is the institutional gap or difference between two or many parties – e.g. a foreign project entrant and a local host. It illustrates the similarities or dissimilarities of two countries' or areas' in regulative, normative, and cultural-cognitive institutional elements (Kostova 1997b). The case of large institutional distance triggers a conflict between achieving local legitimacy in the foreign, host environment, and balancing it with the company's internal global integration (Xu & Shenkar 2002). In other words, organizations need to understand how much they can or should integrate and standardize operations in different institutional environments, and how much room for contingency should be given. Balancing these aspects has proven to be a challenge for multinational enterprises (Fayerweather 1968; Prahalad 1975; Westney 1993; Bartlett & Ghoshal 2002).

The same principles of institutional ignorance and institutional distance from expanding operations to foreign areas apply to global, multinational project environments. Institutional ignorance refers to the lack of institutional knowledge required in the specific foreign working environment and institutional distance as the degree of variance in institutions between entrant and host. Institutional distance culminates in institutional ignorance, which in effect, leads to institutional exceptions.

2.2.4 Institutional exceptions

Orr and Scott (2008) devised institutional exceptions to explain incidents occurring in global projects due to colliding and differentiating institutions. Their study attached institutions distinctly to the management of global projects, as institutional differences

are reasoned to be a root cause for many of the unforeseen costs and uncertainties ever so often present in these projects.

Entrant firm's deviation from local institutions may cause disapproval from the host, which then may lead to unexpected costs (Orr & Scott 2008). An institutional exception occurs when the entrant firm confronts local host and their divergent institutions collide (Orr & Scott 2008). Orr (2005) identified the general process of institutional exception as a three-step sequence: (1) an institutional ignorant or deviant entrant (2) acts in a way which differs from local institutions, (3) culminating in signals, attempted corrections and costs. The exception, which is triggered by institutional ignorance or institutional distance, may either be as a form of commission or omission. The entrant may commission a deviant act that negatively affects the entrant-host relationship, or as an omission overlook important local procedures or customs. Institutionally deviant actions may lead to unforeseen costs in relationship damages, reputational damages, opportunities forgone, sanctions, or extortions (Orr 2005).

2.3 Localization and local elements

Localization is greatly dealt within the internationalization of products for certain markets, but it is just as present in industrial project management practice. Localization in the industrial project business involves many elements and challenges, as projects tend to combine actors, standards, and practices from many countries and cultures. Localization is adapting and implementing local context to own practices and standards (Rosenzweig & Nohria 1994). This chapter explores research literature for defining localization in the project management context, inspects its elements and reasons its urgency.

2.3.1 Call for localization

Entrant companies participating in global projects encounter various abrupt, unforeseen, uncertain, and unknown difficulties due to local characteristics in regulations, norms, and culture (Chua et al. 2003; Orr 2005). Some of these misjudgements and difficulties originate from the failure to understand unfamiliar institutions (North 1990; Scott 2014). This uncertainty in unfamiliar foreign locations often leads to escalated cost and timeline overruns in foreign project environments (Flyvbjerg et al. 2003; Orr & Scott

2008). Thus, it is fruitful for companies to understand diverse aspects of the international projects to avoid significant negative impacts on a firm's operations and profit (Ashley & Bonner 1987; Arditi & Gutierrez 1991; Chan & Tse 2003; Han et al. 2007). Therefore, acquiring knowledge of the local market area and understanding prevailing institutional differences it entails becomes extremely important (Lord & Ranft 2000).

2.3.2 Local embeddedness

Local embeddedness refers to how intact the specific projects or participants are with the local community (Orr et al. 2011). As the local embeddedness grows, e.g. by having a higher number of local linkages and relationships with the local community or local stakeholders, the significance of local knowledge increases (Orr & Levitt 2011).

Local embeddedness directly affects the need and amount of local knowledge needed (Orr 2005). In a case where there exists institutional distance, and if the participating stakeholder or project participant is closely embedded in the environment during the project, the need for local knowledge increases to ensure smooth operation in a foreign institutional context. On the other hand, if the participant in embeddedness in very limited, e.g. working on a specific part of the project internally with little to no local relationships, a low level of local knowledge is sufficient, even if the institutional distance might otherwise be large (Javernick-Will 2013). In other words, local embeddedness explains the degree of localization needed depending on how fixed a stakeholder is with the local environment.

2.3.3 Increasing local knowledge

As the need and benefit of local knowledge have been raised, particularly in highly embedded cases, we investigate how local knowledge can be acquired and increased. There exist various ways for acquiring the needed local knowledge, depending on project location, type, and knowledge in-depthness desired. As an entrant firm or stakeholder chooses to pursuit increasing local knowledge, different methods available should be evaluated. Accumulating the institutional knowledge required in each project location is critical for success (Lord & Ranft 2000; Javernick-Will 2009), as it can have positive impacts on suppressing knowledge gaps for entrant firms participating in a foreign environment (Petersen et al. 2008). Eriksson et al. (1997) found a substantial

correlation between global expansion costs and executives' perceptions of institutional knowledge deficit. Seeking local institutional knowledge to reduce this knowledge gap decreases uncertainty and risks associated with institutional differences (Scott & Javernick-Will 2010).

Exploring and gathering information on previous projects in the area is a valuable source of information. The varying ways how previous projects have been received by locals can give valuable insights into the shaping process of the new project (Merrow 2011, p. 63-64). If historical projects have experienced negative or hostile receival, the root causes should be examined, and possible solutions considered. An equally important challenge as acquiring the institutional knowledge is how the existing and gained knowledge can be shared and transferred across the firm's working locations (Javernick-Will 2010).

Merrow (2011) suggests forming country advance teams as early as possible with the aim to investigate local area and characteristics as much as possible to give a better understanding of the local project atmosphere. Projects should deploy these assessment teams or individuals to get more familiar with the given project location, in contexts of marketing and sales, supply chain, purchasing and logistics, public relations and government affairs, and human resources (Merrow 2011, p. 59-60). Freelance expatriates and other external consultants also play a critical role in mitigating conflicts in global projects (Mahalingam & Levitt 2005; Orr 2005).

Local alliances can be used as well as an entry method for foreign markets. In local alliances, the foreign entrant typically gains marketing know-how on the region from the local partnership company, and typically the local partner seeks to acquire technological competence or other gains from incoming entrant (Teramoto et al. 1994). In an industrial investment project setting, a local contractor or customer can procure or sub-contract competence abroad, and in turn, help with local regulations, norms, and other similar aspects considering the local environment.

2.3.4 Local elements to be assessed from the context of localization

While there exists a boundless amount of locally varying elements to be assessed in multinational industrial investment projects, this chapter describes some key areas found in the literature to form a basis for empirical study and empirical interviews. A

more in-depth look and analysis of different elements will be conducted later in the empirical study to map out the vast spectrum of local elements. The elements inspected in this chapter follow the timeline of an industrial project: location evaluation, variances in the permitting process, local content requirements for procurement, and work safety issues during implementation.

Location evaluation

Very early on, the physical location of planned projects should be given consideration how it affects the project and not overlooked. Climate conditions can have a significant impact on the implementation phase on the construction site and may cause specific requirements for designs and materials, which can easily get overlooked. The remoteness of the project location, i.e. how far it is from population centres, affects infrastructural and logistical attributes of the project. As remoteness increases, the cost of team members increases, and labour supply decreases (Merrow 2011, p. 227-231). Large projects that demand hundreds or even thousands of workers often struggle with labour shortages, and unexpected labour shortages may cause severe problems if sudden requirements of increased workforce occur (Merrow 2011).

As the purpose of location evaluation is to map out external pressures prevailing in considered location, PESTLE analysis gives great insight on different sources of pressures that should be evaluated (Turner 2009). PESTLE is a mnemonic which stands for political, economic, social, technological, legal, and environmental. Political instability in the area is an obvious risk and source of uncertainty and should be evaluated on both local and national levels (Merrow 2011, p. 65-66). Economic development in the area has vast effects directly and in-directly to large projects. Prior social resistance to industrial projects in the area should be investigated, and mitigation plans drafted, as significant social opposition may even affect permitting processes and approval decisions (Merrow 2011, p. 232-233). Technological pressures can be assessed by evaluating local capabilities in sub-contracting and procurement, to analyse if local sourcing is feasible or even available. Legal and regulative pressures have vast effects on project business in the given environment and will be given a closer look later in this chapter. Environmental pressures emerge through both climate requirements as were described earlier, but also greatly affecting permitting processes and approval opportunities when considering industrial projects.

Permitting

Merrow's (2011) study found out that 20% of large industrial projects faced significant permitting problems, where permits were either denied or permitting process delayed more than six months of promised decision dates. The approval process itself to gain rights and approvals for building permits, certifications or land permits is often not transparent, and understanding it well enough needs tacit, prior experience with approving authorities (Scott & Javernick-Will 2010). Often times, approval processes take a lot of time and may have a drastic impact on the project. Therefore they should be carefully and thoroughly taken into account.

Local regulations and regulatory climate vary greatly. The regulatory climate is characterized both by transparency or clearness of regulations, and how strictly they are enforced (Merrow 2011). Problems with regulatory permitting range all the way from small delays or extra work hours to crippling cost overruns or project cancellations. The changing regulatory environment is especially unforgiving and problematic, as understanding the current procedures and requirements gets complicated (Merrow 2011, p. 64). Regulative differences often make it critical to employ local agents to ensure fulfilment of local requirements (Turner 2009).

Local content requirement

Local content requirements should be assessed when planning the procurement of the project. Local content requirements mean formal and informal requirements to use local procurement in an investment project. While formal local content requirements have drawn criticism, most managers attest to securing local content as an opportunity for cost savings and for gaining approval from locals and local institutions (Merrow 2011). Merrow (2011) also points out the importance of assessing the feasibility of local procurement in terms of existing and available local industry competence. In many project locations and cases of large projects, labour shortages are often present, and availability needs to be carefully investigated.

Work safety

Albeit work safety has been widely in the scope of research literature, most of the prior studies have focused on monocultural projects within a single country. Participants of global projects from multiple countries tend to have different cultural perceptions of acceptable work safety levels in international projects, resulting in conflicts and delays.

(Mahalingam & Levitt 2007b) In implementing safety practices and policies in large engineering projects, differing or conflicting views and practices need to be resolved and agreed to pursue the project smoothly forward, e.g. sub-contractors from developing countries may acknowledge their safety policies to be safe enough, while the main contractor might expect and require further precautions.

2.4 Theoretical synthesis

Multinational industrial investment projects are characterized by uncertainty and risks, and these uncertainties and risks are elevated even further in foreign, unknown environments. Despite the enormous effort put upon these large engineering projects in both academic research and management practice, still, a large number of these projects can be recognized as failures by realized cost overruns and delays in execution. (Merrow 2011). Understanding and managing the local context of these projects is one way to decrease and tackle the uncertainty and to improve these complex projects as a whole.

Institutionalized processes or institutions govern local environments promoting certain behaviour or values and discouraging others (North 1990; Kostova 1997a; Scott 2014). Local institutions combined with geographical location form the local environment and local elements of the location. Institutional environments vary spatially and across borders, nations, and cultures, and form pressures and requirements for a project embedded in the local environment (Oliver 1991). To decrease uncertainty and unforeseen occurrences in these projects, these local characteristics and external pressures need to be given consideration and examination.

Institutional processes can be regarded as external pressures put upon the project that is occurring in a distinct environment. These external pressures attempt to command and steer projects and organizations to work and conduct practice in the institutionalized way specific to the location. This institutionalized guidance leads to locally shared isomorphism among organizations in the area (DiMaggio & Powell 1983). The steering and guidance by local institutions, such as work practices or construction standards, vary greatly in their degree of urgency, power and enforcement. In other words, the enforcement of certain institutions can be strict, hence inducing more conformity and obedience to compliance. On the other hand, some institutions, however rigorous their

demands might be, might enforce the demanded conformity only slightly, giving organizations the opportunity to devise their approach to responding to these requirements. This makes it possible and leads to different response strategies organizations deploy to respond to these pressures (Oliver 1991). The project or project organization needs to respond to these external pressures, and so it does – whether through commission or omission. Project organization's response is mainly characterized and distinguished by the degree of resistance it stands against the pressures put upon it – whether it is fully complying with the pressures either consciously or unconsciously, or on the other end of the spectrum using manipulating tactics to change the institutional environment to better suit itself.

While the main goal of localization can be regarded as proper implementation of the project into the local environment, internal project organization localization must not be overlooked. Considering the whole project lifecycle, most of the important decisions and designs affecting the implementation and production of the devised facility are composed during the development stage and ensuring efficient collaboration in that period increases project efficiency and performance. Localization can be regarded as the understanding of local context, whether it be the local institutions or other local elements present in a given environment. Increasing understanding of the local elements is one way to decrease uncertainty originated from the local environment. From the literature findings, localization can be regarded as increasing local understanding, and thus decreasing the uncertainty ever so often present in industrial investment projects.

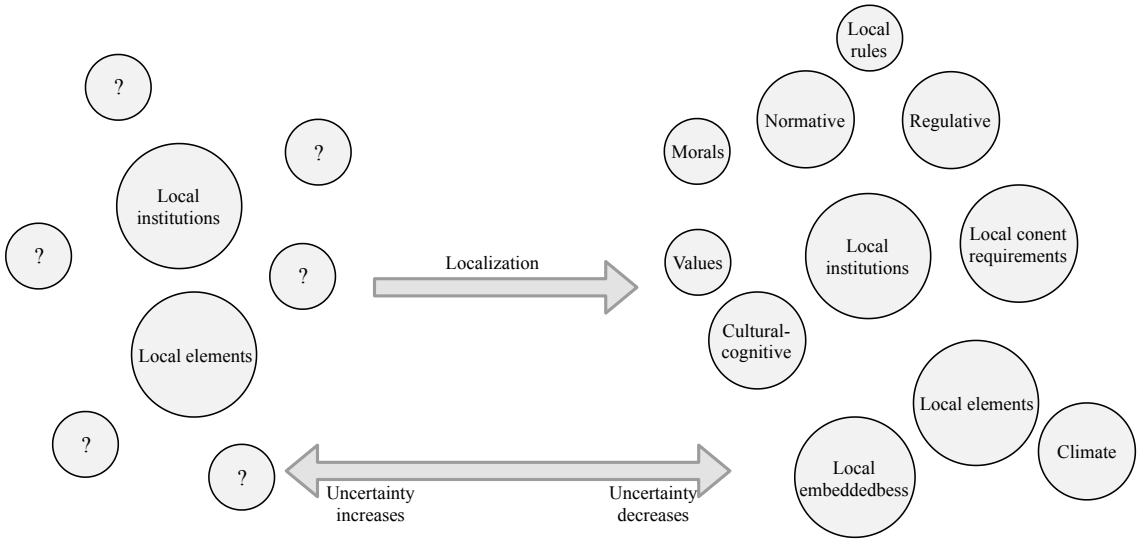


Figure 6. Theoretical conceptualization of localization.

3 KEY ELEMENTS OF LOCALIZATION

This chapter aims to identify the key elements of localization present in multinational industrial investment projects. After constructing the theoretical basis for localization in the literature review, the empirical research aims to validate literature findings and to pinpoint what are the most important localization elements organizations face in industrial investment projects. For this purpose, an empirical study was conducted consisting of workshop sessions, interviews, and analysis of the findings.

This chapter begins by explaining the research methodology used in this study. Succeeding the research methodology, the industrial investment project lifecycle and its main phases are examined. The lifecycle of the industrial investment project was constructed in workshop sessions to form a framework for further research on localization objectives and activities to be structured on. Following the examination of industrial investment project structure, empirical interviews organized are presented, and empirical analysis on findings conducted to determine the key elements of localization in multinational industrial investment projects.

3.1 Research methodology

This study follows a qualitative structure and gathers data from multiple case interviews. Qualitative method is suitable when the real-life context is being researched (Yin 2017). As this study conceptualizes localization with empirical findings and describes the localization in practice, the qualitative research method was chosen.

The research began with a literature review and background study to investigate how localization has been perceived and analysed in literature a priori. The findings on localization were used to summarize localization and its meaning in the context of multinational industrial investment projects and to create a theoretical backbone for the study. The findings were used to form a theoretical basis and a framework for empirical research.

The empirical study began with describing and agreeing on the structure and phasing of an industrial investment project in workshop sessions held within the research project. Succeeding forming the model for industrial investment projects, eighteen interviews

were arranged with managers experienced in various industrial investment projects. The aim of the empirical study was to identify key elements of localization in multinational industrial investment projects. Semi-structured interviews were used to identify various elements of localization from different stakeholders of industrial investment projects. The interview-data was then analysed to categorize and prioritize the most frequent localization elements and the ones the managers acknowledged as the most important and critical for the success of the project.

The empirical findings were then coupled with findings from the literature to form a definition for localization in the context of multinational industrial investment projects, present a localization model for industrial investment project context, and key objectives and activities of localization identified in different stages of industrial investment projects. Figure 7 illustrates the research methodology.

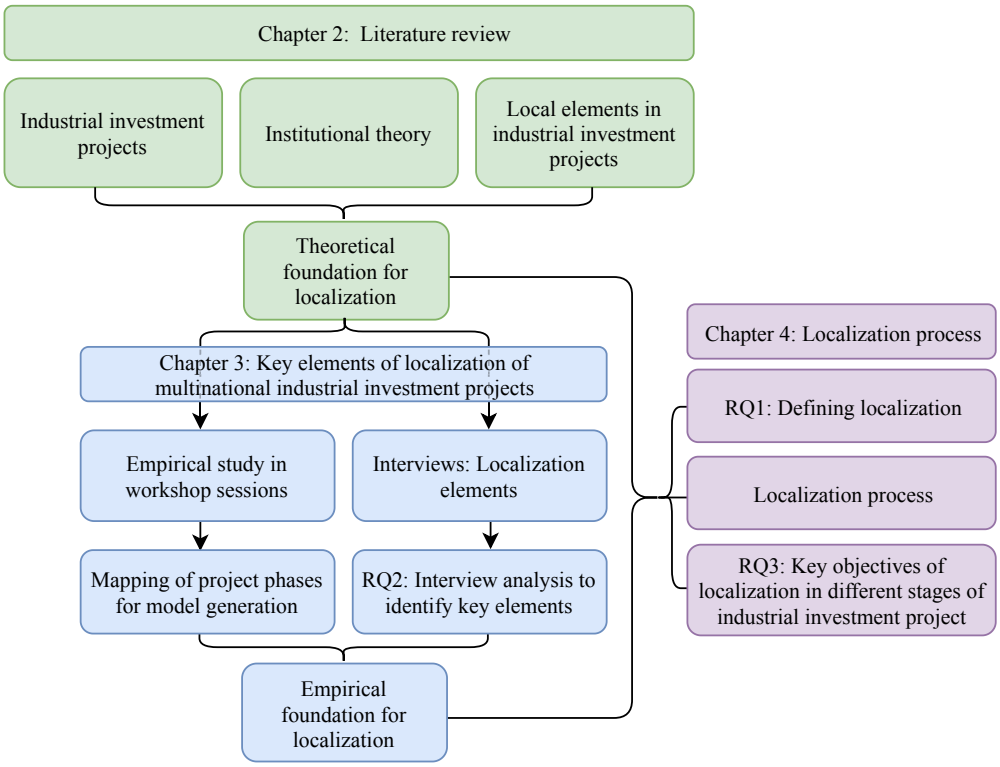


Figure 7. Research methodology.

3.1.1 Data collection

Data for the empirical research was collected from workshop sessions and interviews arranged. Workshop sessions were part of a research project considering collaborative new methods for managing industrial investment projects. Attendees for the workshop sessions were university researchers and company representatives participating in the research project. For this study, workshop sessions and supplementary literature data were used to form and agree on a generic timeline and structure for industrial investment projects to enable the basis for identification of key localization objectives and localizing activities in different stages of multinational industrial investment projects.

Empirical interviews

Eighteen separate interviews were held for a total of twenty industrial investment project managers. The interviewees were selected on the following criteria: suitable experience within large multinational industrial projects, availability to participate, diversity of industry sectors, and mutual connections to ease initial contacting. The interviews were mostly held remotely with voice-over applications, with a few exceptions of in-person interviews. The sessions' lengths of the interviews ranged from 30 minutes to 90 minutes. The final array of representatives represented many types of industry sectors, managerial roles, and businesses in the field of industrial projects. The interviewees, their roles, and business fields are showcased in table 5 below.

Table 6. The interviews held for this study

#	Representative title	Organization type	Experience, years
1	Manager, industrial projects division	Main contractor	15
2	Manager, permitting and documentation	Power plant constructor	40
3	Manager, installation projects; manager, engineering installations division	Installations contractor	30
4	Chairman of the investment project	Investment project, factory	30
5	Manager, industrial construction	Power plant constructor	30
6	Manager, investments division	Forest industry	35
7	Project manager, industrial construction	Main contractor	30
8	Manager, investments division	Electric power industry	15
9	Manager, production division	Metal industry	30
10	Manager, investments division	Metal industry	25
11	Manager, foreign exports	Installations contractor	20
12	Manager, project development	Main contractor	20
13	Project manager, industrial projects	Engineering consulting	30
14	Project manager, large industrial projects	Main contractor	25
15	Project manager, industrial projects	Oil industry	15
16	Manager, turbine division	Power plant constructor	10
17	Project manager, installation projects	Installations contractor	25
18	Chief executive officer; chief finance officer	Installations contractor	25

Interview structure

The interviews followed a semi-structured model that was constructed from the findings of the literature review. The aim of the interviews was to identify how representatives recognized localization, broad spectrum of localization elements, and what they perceived as the key areas of localization considering their prior experiences and varying positions and business fields.

Interviews began with an open question of how representatives have perceived localization or what the term localization means for them. This standpoint was chosen to not bias the interview or guide interviewees too much to a certain direction, as it was anticipated that interviewees might have differentiating conceptions on the concept of localization. Following questions were related to local characteristics, uncertainty, effects of local characteristics, key areas of local environment to be considered before joining a project, unforeseen exceptions, how these exceptions have been handled, preparative measures for different local environment, local sourcing opportunities, local sourcing threats, permitting process variance and who is responsible for localizing efforts. Not all interviews followed a predetermined structure, as some interviewees were much more involved and experienced in certain aspects and some in others. As the point of the interviews was to conduct qualitative research, this was not an issue.

3.2 Industrial investment project phases

As this study is constructed for the research project discussed in a former chapter, for the empirical study and data collection, it was feasible to define industrial investment project phases as they were identified in the research project among the companies involved. While there exists no universally agreed-upon structure for the industrial investment project steps, often they share the same main phases and principles (Munns & Bjeirmi 1996; Merrow 2011; Kerzner 2017). Below, the determined structure for an industrial investment project is defined and described for the empirical analysis to be feasible and achievable.

The industrial investment project consists of three main phases, development, implementation, and production. The project lifecycle starts with product and market analysis exploration and finalizing to completion of the facility and start of the production and eventually shutdown of the plant. Depending on the end product and specifics of the project and production facility, operations of the whole project may continue for decades. Still, most of the significant decisions affecting the whole lifecycle are made during the development stage of the project.

Development phase

The development phase consists of market and product analysis exploration, pre-feasibility study, feasibility study, definitive feasibility study, pre-engineering, basic

engineering, and detailed engineering phases. Market and product analysis exploration starts the whole investment project. During it, the general demand for the product to be produced is studied to give an insight into market interest and demand, or if there is any. In other words, is there sufficient demand for the end product in the current and future markets. Different possibilities for the location of the plant are as well considered. Already in the location evaluation, permitting processes are brought up, considered, and initiated. If the product and market analysis exploration is deemed successful and demand and opportunity perceived satisfactory, the project continues to the first feasibility study called pre-feasibility study. The idea of multiple feasibility studies is to only increasingly invest resources for the project before finally giving the green light to start the implementation phase and construction. Each feasibility study is more accurate than the former but requires more resources and capital as well as collaboration with sub-contractors and other stakeholders.

In the pre-feasibility study, different investment and design alternatives are compared, and preliminary analyses are composed. During the pre-feasibility study, the core team is assigned, and succeeding objectives, goals and gate-checks determined. The goal for the pre-feasibility study is to analyse possibilities and technical options on how the desired end product is achieved. Different concept proposals are developed, evaluated, and the most feasible is selected to continue to the next phase. Generally, the accuracy of investment calculations in the pre-feasibility study phase is only at around 30 percent. Once the rough estimates and analyses have been completed, and if the project still seems attainable and profitable, the decision to proceed to the feasibility study is granted.

When the pre-feasibility study is finalized and gate-check to continue the project is approved, the project advances to the feasibility study phase. Feasibility study extends engineering and design tasks further to ensure the technical feasibility of the project. In the beginning, the objectives of the stage are agreed, the industrial process designed on preliminary detail, and risk evaluation conducted. Capital and operating expenses calculations are detailed further. The feasibility study phase aims for around 20 percent investment accuracy to allow suggestions for advancement to the next phase.

In the definitive feasibility study, the prior designs, plans, and financials are concluded. Permitting processes and needed approvals for implementation are finalized. Often

times, permitting processes are initiated early as they tend to act as bottlenecks in large construction projects. Still, approvals should be investigated and cleared early as they often have the power to alter and even shutdown projects. Implementations plans are constructed, and technical designs detailed. Contractors and sub-contractors are chosen and locked in this phase. Cost accuracy of 10 percent is one of the goals of the definitive feasibility study to support a final investment decision. Once feasibility studies have been conducted, and if the final investment decision is made, project advances to the implementation phase.

Implementation phase

Although the implementation phase can be considered to start after a definitive feasibility study, once the final investment decision is made, some sub-processes of the project overlap and happen simultaneously. Pre-engineering, basic engineering, and detail engineering start during development phase overlapping feasibility and definitive feasibility studies and continue to the implementation phase. Pre-engineering, basic engineering detail engineering work in a similar manner to feasibility studies in that each step is progressively more accurate and detailed. Engineering phases evaluate technical alternatives and design technical capabilities for the upcoming plant.

Procurement overlaps both the development and implementation phases. High lead-time procurement, e.g. main process suppliers, needs to be ordered well early to guarantee on-time deliveries and avoid the unnecessary time, and due to bottlenecking advancement of the project, cost overruns. The following procurement is the main construction phase. The importance of early involvement of key sub-contractors and planning excellency in development phases is significant, as any alternations made to designs in the construction phase usually end up as high-cost increments and delays.

Finally, as construction work is finished, the commissioning phase begins. In commissioning, the finished construction tasks are inspected, processes tested, and once all aspects pass the required tests, the production ramp-up is started, eventually finalizing in production plant running with intended capacity. Figure 8 maps out phases of the industrial investment project and lists sub-processes these phases include.

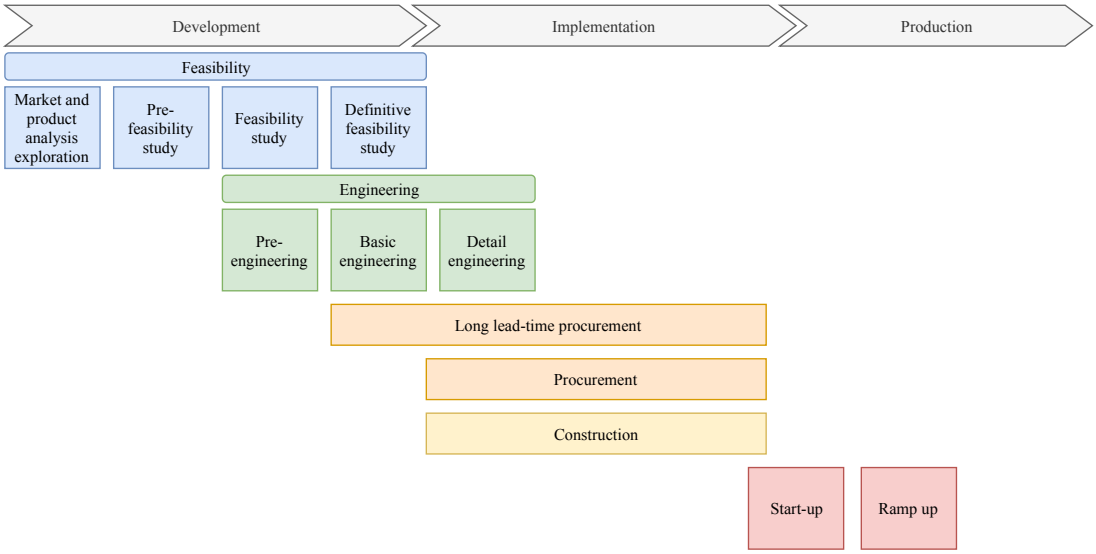


Figure 8. Main phases of the industrial investment project

3.3 Empirical analysis

Throughout the interviews held for this study, it was both anticipated and shortly noted that the main points of the localization vary among the interviewees. What localization really is or how it is perceived changes from company to company for various reasons. This chapter displays and analyses the interview results to expand the practical understanding of localization and to identify the key elements of localization present in multinational industrial investment projects.

Elements of localization in case interviews

To enable further inspection and mapping of localization as a process, key elements of localization in multinational industrial investment projects were identified from interviews and analysed. From the eighteen interviews, a total of 218 separate localization elements were identified that were further placed into eighteen separately themed categories to allow further analysis. Each element was fitted into one, two, or three categories depending on the specific case, according to which theme would best describe the element. Categories were simply chosen by going through each element and fitting into a category best explaining it. After each element was listed into at least one category, closely similar categories were merged together. The final eighteen categories are listed in alphabetical order in table 7.

Table 7. Localization element themes

Element theme	Description
Adapting local standards	Differing local requirements or standards on products and practices in local environments
Communication	Well established communication's importance either in avoiding exceptions or in exceeding expectations
Contractual	Varying practices in contract and bidding process that are highlighted in multinational investment projects
Cultural differences	Challenges originating from cultural differences or from failure to understand different cultures
Facilitating inbound personnel	Preparative work required for inbound personnel i.e. preparation of accommodation
Geographical location	Specific requirements and effects the geographical location of the project site causes i.e. climate
Legal regulations	Varying legal aspects in large multinational projects and local variance of these regulations
Local knowledge acquirement	Sources and steps of preparative work of investigating projects' local environment
Local resistance	Social resistance from locals or local institutions, and handling of this negative pressure put upon the project
Local sourcing	Specifics, risks and nuances affecting local sourcing of materials, equipment and personnel
Logistics	Consideration of logistical matters in projects i.e. rural location or shipments to islands
Management	Leadership considering managing of the localization and its key aspects during the projects
Permitting	Approval and permitting policies considering the project and its approvals and permits
Political stability	Location's and nation's political status and stability affecting the project in various ways
Risk management	General risk management and how risk management is enhanced in large multinational projects
Sub-contracting	Sub-contracting personnel either locally or from another foreign country, and its various aspects
Uncertainty	Unforeseen uncertainty and how it affects the project environment and general project management
Working regulations	Regulative matters affecting transferring of personnel or conducting work across borders

The key elements identified in each category are exhibited in more detail in the appendix and should be examined by the reader to expand understanding of local elements. It should be noted that the elements and themes included consist of all localization elements identified from the interviews – meaning that in a single project or

perspective, these are not all present. Table 8 showcases each category's percentual instance and theme occurrence among interviews. The percentual instance is calculated by dividing the number of elements with total instances after the 218 identified elements had been assigned to one, two, or three categories, totalling the 490 instances of categorized elements. Theme occurrence displays the localization element category's occurrence in interviews, e.g. risk management with 100 % occurrence means it was present in all of the eighteen interviews. As the theme occurrence follows the almost same order of percentual instances, we can rule out the possibility of bias by one interview influencing the results substantially.

Table 8. Localization element themes' percentual occurrence in total and occurrence among each interview.

Element theme	Number of elements	Percentual instance	Theme occurrence among interviews
Adapting local standards	70	14.3 %	94 %
Communication	20	4.1 %	67 %
Contractual	19	3.9 %	67 %
Cultural differences	26	5.3 %	72 %
Facilitating inbound personnel	5	1.0 %	22 %
Geographical location	22	4.5 %	61 %
Legal regulations	17	3.5 %	50 %
Local knowledge acquirement	43	8.8 %	94 %
Local resistance	9	1.8 %	44 %
Local sourcing	42	8.6 %	89 %
Logistics	23	4.7 %	67 %
Management	32	6.5 %	89 %
Permitting	22	4.5 %	67 %
Political stability	6	1.2 %	28 %
Risk management	50	10.2 %	100 %
Sub-contracting	28	5.7 %	94 %
Uncertainty	28	5.7 %	67 %
Working regulations	28	5.7 %	78 %
Total	490*	100 %	

Degree of localization

While some aspects of localization, such as risk management, research of foreign environment, and general uncertainty, were present in all cases, it was noted that certain types of businesses felt some localization elements as not affecting their work and business in local environments. For example, most of the installation contractors felt that local permitting and approval issues don't really affect their business, as they are given straightforward and approved designs to be followed. In the same way, some specific contractors had not felt the effects of local resistance affecting their work, even though the project could as the whole have had such a situation. And some had not had any difficulties with local sub-contracting simply because they chose not to hire locals or did not have the need for sub-contracting external workforce.

These variations can be explained with the varying levels of local embeddedness project stakeholders are with the local environment (Orr et al. 2011). As local embeddedness increases, the number of localization elements and their influence grows (Orr & Levitt 2011), and hence, the degree of localization increases. Level of embeddedness and in effect, the needed degree of localization should be assessed in the early phase of joining a project to ensure the proper approach to the localization matters.

3.4 Empirical synthesis

The empirical study was conducted to identify the key elements of localization present in multinational industrial investment projects and give practical ground for this study. Interviews were held to gain practical insight and empirical support for the literature findings and to expand understanding of localization further. Numerous local elements present in industrial projects were identified and further analysed and categorized to identify the key elements. The key elements of localization describe what the fundamental local elements in project environments are.

While literature explained the local characteristics through theoretical reasoning of institutional theory, empirical research found out what the local characteristics are in practice. Theoretical and empirical findings supported each other, and the conducted empirical study expanded the conceptualization of localization in the context of multinational industrial investment projects.

The industrial investment project lifecycle was determined to consist of development, implementation, and production stages. The main stages of industrial investment project during development and implementation were identified as feasibility studies, engineering phases, procurement, and construction.

With the empirical findings of key elements of localization from the conducted empirical research, a determined framework for an industrial investment project, and prior literature findings on the local context of multinational industrial investment projects, we move on to define localization and identify its key objectives and activities.

4 LOCALIZATION AND KEY OBJECTIVES

This chapter combines findings from literature and empirical study to define and describe a localization in different stages of industrial investment projects. We begin by defining localization from the prior theoretical and empirical findings. A localization process is constructed the further describe and conceptualize localization. After defining and describing localization, we examine localization objectives, and key activities is different stages of industrial investment projects, to expand understanding of localization in the context of industrial investment projects.

4.1 Defining localization

Background study and literature review showed that no concluding definition was presented before for the industrial investment project context. The basis for definition was formed from the arguments linking poor project performance to lacking understanding of local context (Mahalingam & Levitt 2007a; Orr & Scott 2008; Javernick-Will & Levitt 2010). Oliver's (1991) work on external pressures and various ways to strategically approach them extends the understanding of local context, how it affects operations and what are the different available approaches to respond to the pressures the local context creates.

The empirical study validated these findings and applied practicality to theoretical insights. All case-interviews supported the importance of understanding the local context and differences it establishes to the industrial investment projects. Empirical findings emphasize the uncertainty of the local environment, highlighting the importance of risk management and familiarization with the local project environment. While local context delivers a burden to the project environment, the empirical study also identified opportunities it may provide. From the literature findings and empirical study, we define localization as:

"*Localization is the management of activities carried out to establish an understanding of the local context and its pressures on industrial investment project, with an objective of decreasing uncertainty and identifying opportunities, and the means how these objectives will be accomplished.*"

To further describe and conceptualize the localization definition, a localization process model is presumed. The localization process aims to conceptualize and characterize localization and its phases to give more detail and description to the definition of localization. The proposed localization process is divided into localization mapping, localization strategy, and localization execution. Next, the proposed localization process model is displayed, and its sub-processes examined.

Localization process

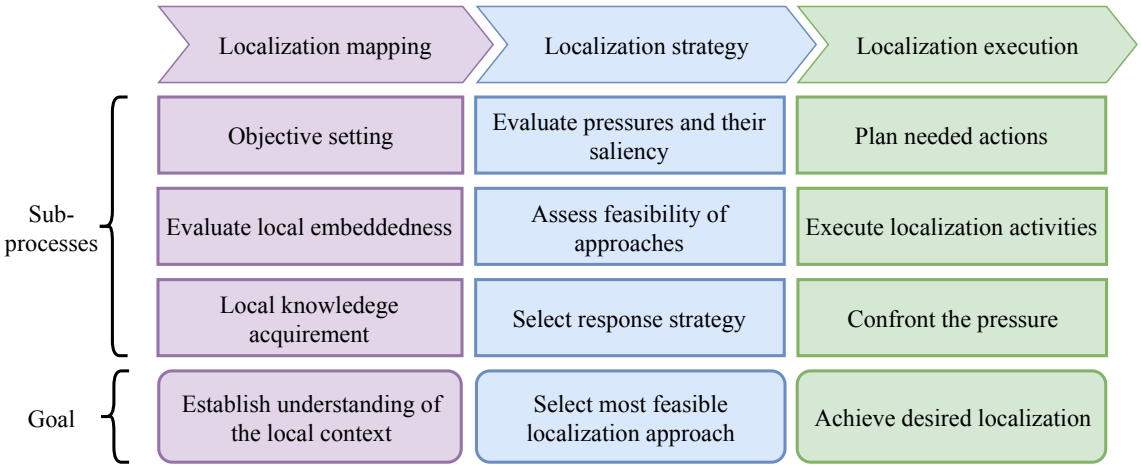


Figure 9. The localization process model.

The proposed localization process is constructed from the theoretical and empirical findings on localization and understanding attained in this study. The purpose of the proposed localization process model is to conceptualize localization in the industrial investment project context. It should be noted that localization process is not to be understood as an independent, new process for managing industrial investment projects, but rather as a supportive method or mindset for sub-processes of industrial investment projects. The proposed model aims to conceptualize localization to increase understanding of how local context affects operations, what are possible approaches or alternatives available, and how localizing actions could be put into action.

Localization mapping

The first step in the proposed localization process is localization mapping. The purpose of localization mapping is to construct an understanding of the prevailing local environment, to understand its local elements, and to give a basis for further steps.

Localization mapping begins by forming the objectives for the localization process. The objectives set vary in the initial setting what is trying to be achieved with localization. If the setting and underlying project phase is the evaluation of possible locations for industrial investment project, the scale of localization activities is highest to enable more realistic and comprehensive location evaluation.

Local embeddedness should also be assessed. How embedded and intact with the local environment you are going to be during the project has a significant impact on how comprehensively localization should be executed. The level of embedded affects all local elements and their effects on your operations. For example, if you are only supplying certain process equipment or conducting installations work, the prevailing local environment may have only a slight effect on you, and lesser localization efforts may be sufficient. On the other hand, if you are the customer or main contractor of the project, and in charge of the project as a whole, your degree of embeddedness is capital and needed a degree of localization high. In other words, even if the local environment would be politically unstable with an unclear regulative atmosphere or otherwise highly uncertain if you are only slightly embedded to the local environment during your operations, local prevailing pressured may have diminished effect on your operations.

After setting of the objectives, inspection of local environment, and investigation of local elements present starts. The aim is to gain an understanding what he local context in case is, how it affects to own operation, how it could affect, what are the external pressures in the given local environment, and what are the local requirements affecting our usual operations. To answer these questions, the local context needs to be researched. If the organization has not operated in the area before and has no experience of the nation or the specific local environment, the importance of research is highlighted.

Various methods for conducting the research and acquiring the needed local knowledge should be evaluated, depending on the objectives set, degree of local embeddedness acknowledged, and unfamiliarity of the area. From the findings of empirical research, several methods of approach were identified to acquire local knowledge: subsidiaries in the area, local embassies, local consultants, local customer, own prior projects, research on other prior projects, and country advancement teams, depending on the needed and desired amount of local knowledge. The research topics and areas of local knowledge to be assessed are the key elements of localization identified in the empirical research.

At the end of the localization mapping, a clear understanding should have been achieved on local environment's external pressures and key elements of localization. The understanding is used to get familiar with the local environment, and therefore decrease uncertainty it causes and to enable next phases localization, localization strategy, and localization execution.

Localization strategy

Once the understanding of local context has been established, a localization strategy is to be constructed. The purpose of devising localization strategy is to evaluate how identified local elements and local pressures influence own operations and what are available options and approaches to respond to these pressures. As Oliver (1991) argued, a direct adaptation of local requirements and practices is not always the viable or the only way to respond to the local environment's pressures put upon organization or project, and adaptation should not be taken for granted. Even if the local environment attempts to pressure the organization in a certain way, other options should be evaluated. For example, one interviewed project manager described a case where a customer had required significantly higher structural requirements for an upcoming plant than what were the national standards required. The project manager managed to convince the customer to lower the requirements to correspond to national norms better. This resulted in very significant cost savings for the project while still achieving satisfactory quality. In this case, challenging the pressure put upon by the local customer resulted in more value for the customer, the project manager, and the whole project. While this is only a single example, many such opportunities lie in the evaluation of response strategies.

After mapping out the local environment's pressures and requirements, coupled with evaluating their effectual influence on your operations depending on the level of local embeddedness, response evaluation should be conducted. Requirements' saliency (Oliver 2011) should be considered though their power, legitimacy, and urgency. The power attribute describes how significant is the pressure put upon you. In other words, how much changes or costs are associated with adaptation to the requirement. As in the previous example, adaptation to customer's requirements would have had a significant effect on costs for the whole project. Legitimacy describes the source and reasoning for the required requirement. If the source is customer, possible alternatives are easily proposed if seemed feasible. On the other hand, if the source of the pressure is a legal requirement or other highly institutionalized institution, its source is most often very legitimate, altering the pressure difficult, and following or adaptation is often the best bet. Reasoning describes how reasoned and fair the pressure is assumed or if the required requirements seem unnational. While many local pressures can be identified from local environments, it is also important to evaluate their urgency. Urgency characterizes the enforcement of the pressure put upon you. If the pressure is high in power, meaning it would have a significant impact on operations, but only very slightly enforced, it should not be followed and adapted without evaluating the alternatives. After the evaluation of requirements and choosing of approaches, localization execution follows, and localizing activities are dispatched.

Localization execution

After mapping out and establishing an understanding of the local context of the project and devising the localization approach and strategy, the localizing activities are executed. Oliver (1991) described twelve response tactics to external pressures: habiting, imitation, complying, balancing, pacifying, bargaining, concealing, buffering, escaping, dismissing, challenging, attacking, co-opting, influencing and controlling. If a conforming approach is chosen and the decision to adapt to local requirements is made, direct activities need to be conducted. For example, one interviewee explained a case where their fire doors did not match the local fire department's safety requirements. In this case, they had to modify their designs and get verifications of approval from the local fire department after applying modifications to their products. In this case, they understood the need for changes, chose to adapt to specifications of local standards, and confronted the requirement with conformity, and received the approval. Activities to be conducted vary greatly depending on the case and response approach chosen.

4.2 Localization in different phases of the industrial investment project

The goal of the localization definition and process model was to conceptualize localization in industrial investment projects. It should be noted that the localization in these projects is not necessarily and perhaps should not be an individual or independent process, but rather a supportive sub-process or mindset during various phases of an industrial investment project. To establish an understanding of how localization is applicable to the context of multinational industrial investment projects and to showcase and describe practicality of localization process, examples of localization objectives, localizing activities, and desired localization outcomes are presented for each industrial investment project phase.

Table 9. Localization objectives in different phases of industrial investment projects.

Project phase	Localization objective	Localizing activities
Market and product analysis exploration	Evaluate local political, social, geographical, logistical, cultural and legal elements effects of project to aid in evaluation of possible project locations choosing the most feasible site location	Conducting comprehensive research of local elements by researching prior project success in area, physical examination of project location and analysis of local institutional or external pressures in the location.
	Identification of the key elements of localization to increase understanding of local context and to aid in upcoming feasibility studies	
Feasibility studies	Support feasibility study accuracy by taking local elements into consideration	Use of local knowledge established in prior phase
	Support evaluation of alternative options to choose best for the local environment	Assessment of local risk factors
Engineering	Decrease the probability and frequency of design changes in implementation phase	Understanding and evaluating the local elements in design and engineering work
	Making sure all designs and engineering work is applicable to local environment	Evaluating climate requirements, local customer's requirements and local regulations

Table 10. Localization objectives in different phases industrial investment projects.

Project phase	Localization objective	Localizing activities
Procurement	Identify opportunities local sourcing enables to evaluate and choose most feasible and capable sub-contractors	Identify local content requirements, if any, and investigate potential benefits of local procurement, e.g. cost savings or increased local acceptance
	Identify realistic tender offers and do not fall to lowest-bid	Identify local sub-contractors or sub-contractors with local knowledge, as they are the ones capable of giving realistic offers have existing local knowledge
Construction	Project identity unification	Understand the prevailing cultural differences, and with proper orientation and management create unified project environment that is key for project implementation success
	Decrease social resistance	By understanding the local context and sources of pressures, and to respond to these in best possible means such as transparent outbound communication.

As noted, the main focus of localization is to support existing processes in industrial investment projects by bringing the local context to these processes. In other words, localization aims to help and surpass the objectives of other project phases by acknowledging the risk factors and identifying opportunities by taking the local context into consideration. This can be considered as the main purpose of localization. Next, localization is briefly discussed in each project phase.

Market and product analysis exploration

Market and product analysis exploration aims to identify market demand, ideate investment opportunity, and choose a project site location. The benefit of understanding the local context is present in each of the three objectives of market and product analysis exploration.

All prevailing local elements should be investigated in the proposed location to be able to fully understand local opportunities and risks they impose. Considerable research on local elements also paves the way for localization in further steps of an industrial investment project. From the empirical findings, the themes greatly present in this phase

are: geographical location, risk management, political stability, facilitating inbound personnel, legal regulations, local resistance, local sourcing, logistics, permitting, and uncertainty. All of the above themes identified in market and product analysis exploration can be regarded as evaluating the feasibility of the location for a certain project and assessing the various risks the specific location establishes upon the project. The main purpose of localization at the beginning of the industrial investment project lifecycle is to study effectual characteristics of proposed locations, to assess risks the specific locations ensue, and to select the best location possible for the project.

Feasibility studies

Feasibility study extends the investigative work started in the market and product analysis exploration but takes it to a more in-depth level and adding more detail and dimensions. In short, while the location has been selected in earlier market & product analysis exploration phase, feasibility studies are conducted to ensure general feasibility to continue the project. While not limited to, feasibility studies should include analysing all aspects of the local environment to enable more realistic investment estimate accuracy and to be able to conduct a comprehensive risk assessment and risk mitigation plans.

Engineering

Themes found in the empirical study that belong to tjhe engineering phase and are the most highlighted are adapting local standards, communication, cultural differences, geographical location, legal regulations, local knowledge acquirement, local sourcing, logistics, management, and permitting. Focal point in localizing engineering work is to make sure all the designs are applicable in the local project environment and to make sure all designs and engineering work are done in the same, agreed manners and standards. As was noted in the empirical study, often, if the design or engineering work is conducted by a foreigner and in a foreign environment, many of the local elements are overlooked.

The project's location may embed specific requirements to engineering and design in forms of local regulations, standards, and cultural norms (Scott 2014). Many of the interviewees noted the importance of understanding the "local way doing", to ensure the applicability of design work. These local standards may be due to the nation's specific laws requiring processes and facilities to be designed in a certain way, culturally

embedded ways of conducting work in a particular fashion or local climate affecting design standards, for example. One of the interviewed managers noted that when designs for facilities are compiled elsewhere, often local climate's requirements get overlooked, and changes need to be applied later on, requiring extra effort and cost. It could be argued that if all project stakeholders participating in engineering followed local requirements, there would be minimal amount of trouble rising from divergent standards and practices. The challenge lies in communicating the local requirements to all involved participants, and to get them to follow these requirements.

Procurement

Localization of procurement involves evaluating the feasibility of local procurement. From the materials perspective, if local procurement options are available, they should be investigated. Common building materials, concrete, for example, should be procured locally to decrease shipment and logistics costs. Locally procured materials may also have proper specifications for local regulative and climate requirements.

Another considerable localization aspect of procurement is the opportunity to use local sub-contractors and workforce. Many of the interviewees noted the use of local sub-contractors or personnel as an opportunity but highlighted the risks they might bring to the project. Potential opportunities of using locals are in cost savings and potentiality to gain insight into local requirements though locals' competence. One interviewed manager noted the local sub-contractors' greater ability to approximate costs in the bidding process, as they have prior knowledge of local nuances that might get overlooked by inbound foreign contractors.

Few interviewees also brought up local procurement as a way of gaining local legitimacy and social acceptance. Both local residents and local officials might take a more benevolent stance for the industrial investment project if local procurement is used. Some countries also have specific regulations on using a certain amount of local workforce and sub-contractors in projects.

On the risks of hiring local sub-contractors, the most highlighted aspects in the interviews were the difficultness of looking for the reliable local workforce, the effort needed to audit local sub-contractors, and potentially very different working practices and norms. Usually, the industrial investment projects are very large, and often the local

sub-contractors tend to be too small by their resources to take up on large delivery packages. The importance of auditing sub-contractor's financial capabilities and references to assess the risks and uncertainty of hiring locals was brought up in many case-interviews.

Construction

Localization themes identified in the empirical study that are present in the construction phase of multinational industrial investment projects include cultural differences, adapting local standards, communication, geographical location, working regulations, facilitating inbound personnel, local sourcing, logistics, management. While many of the preparative localization steps occur before construction, localization is as well present during construction in many forms of managing construction practices on site.

As the construction site of a large industrial investment project can be a clash of many cultures and practices, the importance of unification of working practices was recognized as a paramount issue to enable project success. The variance of multi-cultural backgrounds is reflected in work safety, decision-making, work performance, hierarchies, contractual differences, and general handling of tasks between various participating companies and individuals. From the interviews, the unification of project identity and project culture was identified as a both-way process; the main project manager needs to understand the importance of unifying all participants under the common project, and sub-contractors need to be willing to adapt to local prevailing atmosphere.

5 CONCLUSIONS

This chapter presents the research conclusion for this thesis. The key results found are displayed and evaluated. Theoretical contributions made are assessed, and managerial implications appraised. Results presented and their validity is assessed. Finally, opportunities and suggestions for further research are proposed.

5.1 Key results

The ultimate purpose of this study was to expand knowledge and understanding of localization in the context of multinational industrial investment projects. Research questions were chosen to support this goal by studying how localization is defined, what are its main elements, and how localization is present in different stages of industrial investment projects. Next, the research questions are revised, and the findings summarized.

> **RQ1: How to define localization in the context of multinational industrial investment projects?**

Prior literature related to localization, industrial investment projects, and its local context was researched, and empirical study constructed. From these findings, the definition of localization was formed. Localization in the context of multinational industrial investment projects was defined to be the management of activities carried out to establish an understanding of the local context and its pressures on industrial investment project, with an objective of decreasing uncertainty and identifying opportunities, and the means how these objectives will be accomplished.

The localization process model was presented to conceptualize the proposed definition for localization. The localization process proposed consisted of localization mapping, localization strategy, and localization execution. Localization mapping aims to establish an understanding of the prevailing local environment, localization strategy is evaluating approaches to localization, and localization execution is the means how localizing actions are conducted, and localization objectives realized.

RQ2: What are the elements of localization in multinational industrial investment projects?

The literature review was conducted to form a conceptualized theoretical understanding of elements of localization and to give a foundation for empirical research. To expand the literature findings, empirical research was conducted to identify the key elements of localization in a multinational industrial investment project environment. The key elements of localization are various local characteristics and elements to be considered during industrial investment projects.

Eighteen separate key elements were identified in empirical analysis to expand knowledge on the localization of industrial investment projects in practice. The key elements of localization identified and to be considered are: adapting local standards, risk management, local knowledge acquirement, local sourcing, management, sub-contracting, uncertainty, working regulations, cultural differences, logistics, geographical location, permitting, communication, contractual, legal regulations, local resistance, political stability and facilitating inbound personnel.

RQ3: What are the key objectives of localization in different stages of multinational industrial investment project?

The purpose of this study was to research localization in the context of multinational industrial investment project. Describing industrial investment project phases, defining localization, and identifying the key elements of localization enabled the inspection of how localization is present and what are its key objectives in different stages of an industrial investment project.

The key objective of localization is to support the sub-processes of the industrial investment project by brining local context and understanding of its effects to each stage of an industrial investment project. The key objectives of localization in different stages of industrial investment project are summarized to include enabling the choosing of the best location, increasing the accuracy of feasibility studies, ensuring applicability of designs to the local environment, identifying opportunities and risks in local procurement, and unification of project atmosphere during construction.

5.2 Theoretical contribution

This research provided new knowledge about localization in the industrial investment project context. Prior studies have asserted the importance, foundation and reasoning for localization, but the research and discourse on localization in the context of industrial investment project have been scattered. This study provided a conceptualization of localization in the industrial investment project context, validated theoretical findings with empirical study, and expanded the research on localization. Localization in the context of industrial investment projects was defined to form uniformity to the understanding of localization. The definition was formed by compiling the findings of the literature review and empirical research. While literature findings gave a theoretical basis for the definition of localization, the empirical study validated and expanded it. Analysing the key elements of localization and identifying the key objectives of localization in different stages of industrial investment project contributed to the literature by expanding the understanding of how localization is applicable and applied in the context of industrial investment projects.

The theoretical conceptualization of localization and its attributes constructed from the literature findings shared many principles with the empirical case-interviews. Importance and impact of local context to project management (Mahalingam & Levitt 2007a: Orr & Scott 2008;) was confirmed by all of the participants. Where institutions (North 1990; Scott 2014) and institutional distance (Kostova & Zaheer 1999; Kostova 1999) were argued to be underlying elements of local context and reason the need for localization, participating interviewees acknowledged the very same principles in more practical manner, expressing the presence of need for localization due to uncertainty created by local regulations, ways of conducting work and cultural differences encountered. This validated the literature findings with empirical support and established practicality to the theoretical framework. It could be argued that all theoretical findings formed in the literature review were found in the interviews, only in more practical form and terminology. For example, Oliver's (1991) work on strategic responses to institutional pressures was endorsed by many practical examples of how local requirements are approached in real-life cases. In this sense, literature review and empirical research greatly supported each other and enabled convenient localization definition that is applicable to and supported by both literature and practice of localization in the context of industrial investment projects.

5.3 Managerial implications

Prior literature and statistics argue for the need for increased understanding of localization to enable better project performance. While localization is in effect and in practice in the management of industrial investment projects, often it is unsystematically approached, conceptualization, rudimentary and its significance overlooked.

This study expanded and conceptualized understanding of local context and localization in the multinational industrial investment project context. Defining localization, the inspection of the key elements of localization, and identifying the key objectives of localization in different stages of industrial investment project conceptualizes the localization to increase understanding of how local context is to be considered during these projects.

The empirical study identified key elements of localization and displayed various localization elements managers face and acknowledge in these projects. The findings of the empirical study give managerial implications what are the vast local elements to be considered to increase project performance in industrial investment projects, what are the local characteristics to be contemplated before joining a foreign project and what are the means and activities to increase the degree of localization, and thus the overall project performance during industrial investment projects. The identified elements can be used as a check-list tool to inspect if some local elements have been overlooked or left out of consideration.

5.4 Result evaluation

The result evaluation of this thesis is assessed through internal and external validity, reliability, and objectivity. Internal validity describes the credibility of the research, external validity means the applicability of results to other contexts, reliability considers the reliability of the research process and research methods, and objectivity means the presence of any bias in presented results (Denzin 2009).

The internal validity of this research is satisfactory as both prior literature and empirical findings support the need for better management of the local context and localization during industrial investment projects. The findings on localization, proposed

localization definition, key elements to consider, and key objectives in different stages are credible as they were formed from and supported by both literature findings, and the empirical study. The research lacks the final validation for the proposed definition and applicability of results in real-life cases. The validation could be assessed by arranging a questionnaire to interviewed participants to verify their conformity to the results presented.

The external validity is good, as the conceptualization of localization and findings on the importance of local context is applicable to many fields besides industrial projects. The categorized key elements, while identified from the industrial investment project context, may support and give insights to local elements present in various areas where local context needs to be assessed. The key objectives and activities proposed and presented are highly embedded in the context of industrial investment projects, and therefore lack the transformability to other contexts.

The reliability of the empirical research is good as interviews were well documented, and when approved, recorded. The reliability of this research could have been increased by presenting more detailed information about interview-data but was purposely left out to guarantee anonymity to the participating interviewees.

To ensure objectivity in the empirical interviews, the interview structure was open and aimed to identify the key elements of localization without biasing the interviews in a certain direction. On the other hand, as theoretical findings were used in interviews, in cases where interviewees did not come up with many insights to localization, guiding questions were used to find out how the local context in different sub-fields, e.g. sub-contracting. This may have caused slight subjectivity to the identification of the key elements of localization.

5.5 Future research opportunities

Localization in industrial project practice is a vast territory of elements, practices, and stakeholders, and opportunities for further research in the field of industrial project localization are just as abundant. As this thesis was constructed as a broad, general level inspection, future opportunities lie in scoping of the theme to specific industry or location, to enable more detailed findings and suggestions. Other opportunities lie in validating the research results and proposed key elements and objectives of localization in future research. The field of localization can also be expanded to many areas of research, where not yet applied, in the everyday globalizing world.

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7 APPENDICES

Appendix 1. Identified localization elements of adapting local standards.

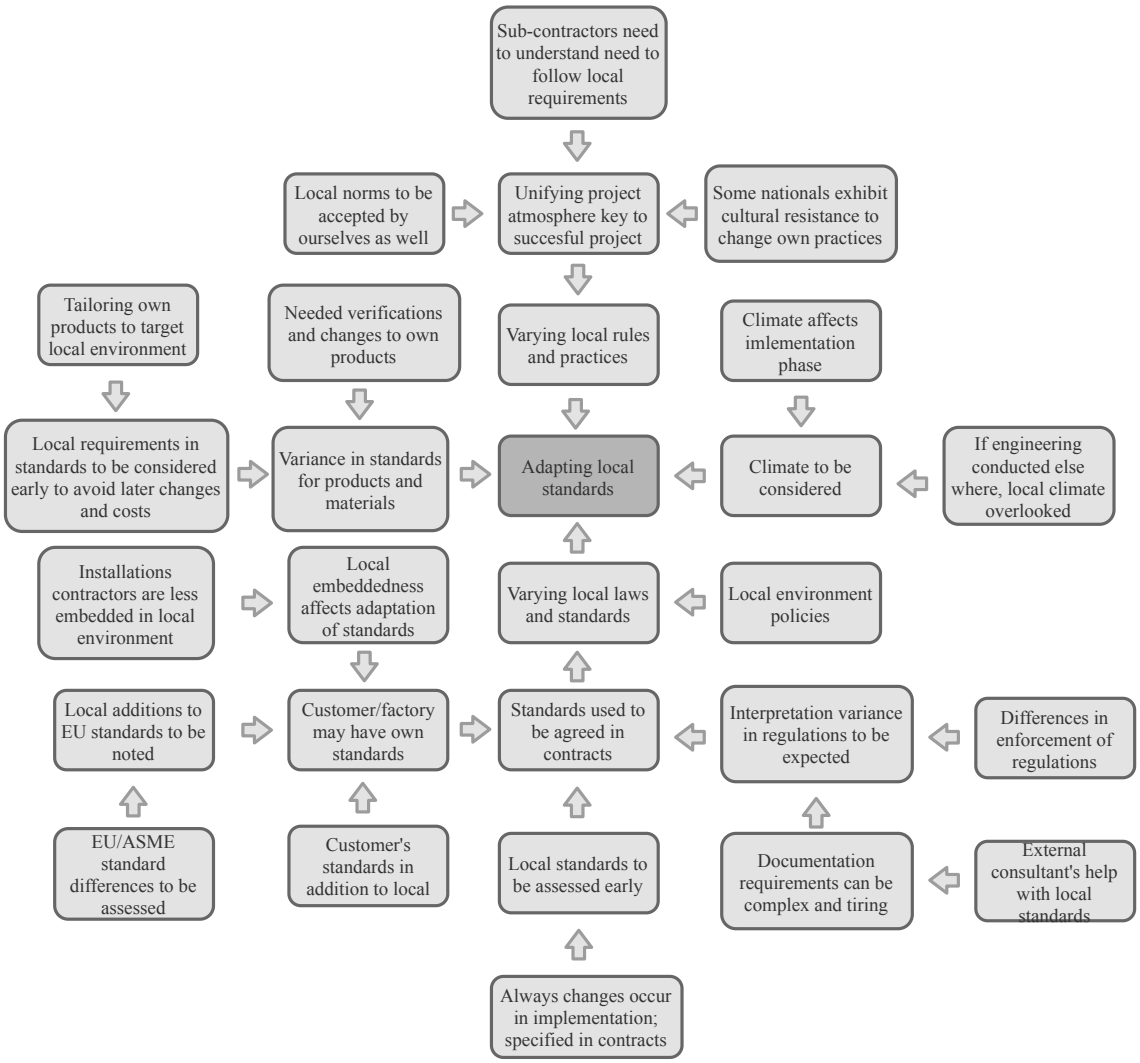

Figure 10. Identified localization elements of adapting local standards.

Appendix 2. Identified localization elements of communication.

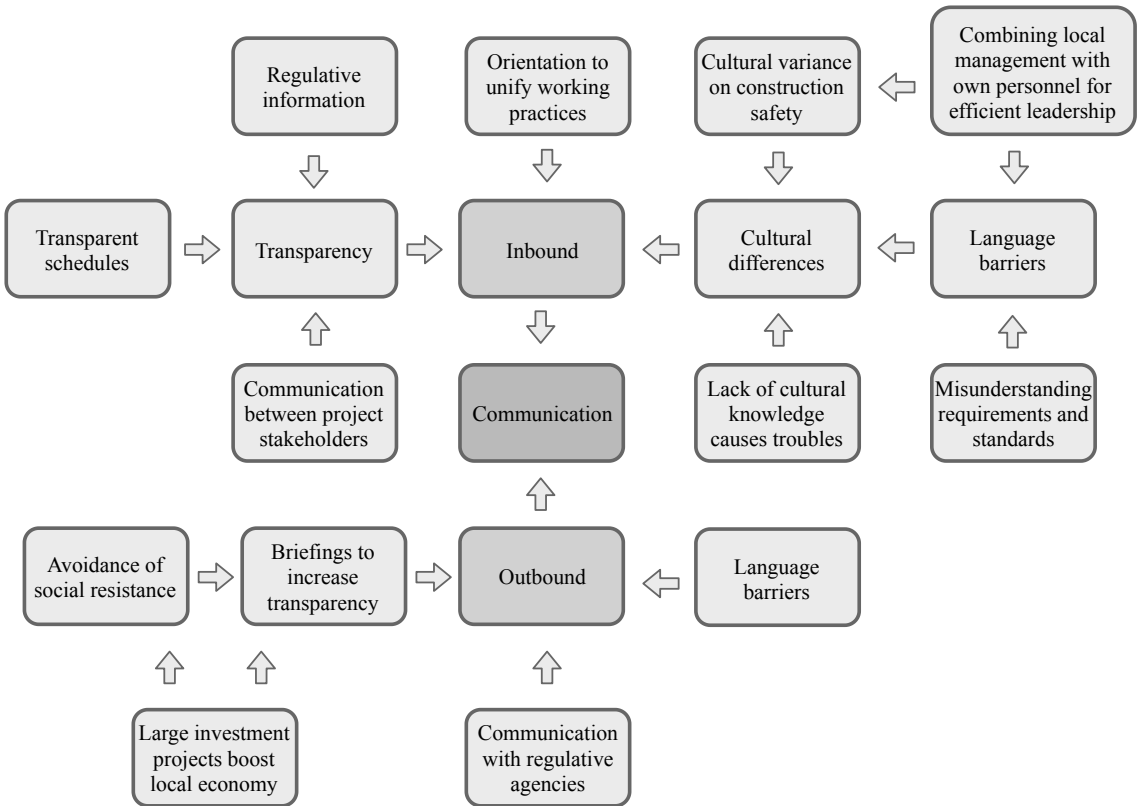

Figure 11. Identified localization elements of communication.

Appendix 3. Identified localization elements of contractual.

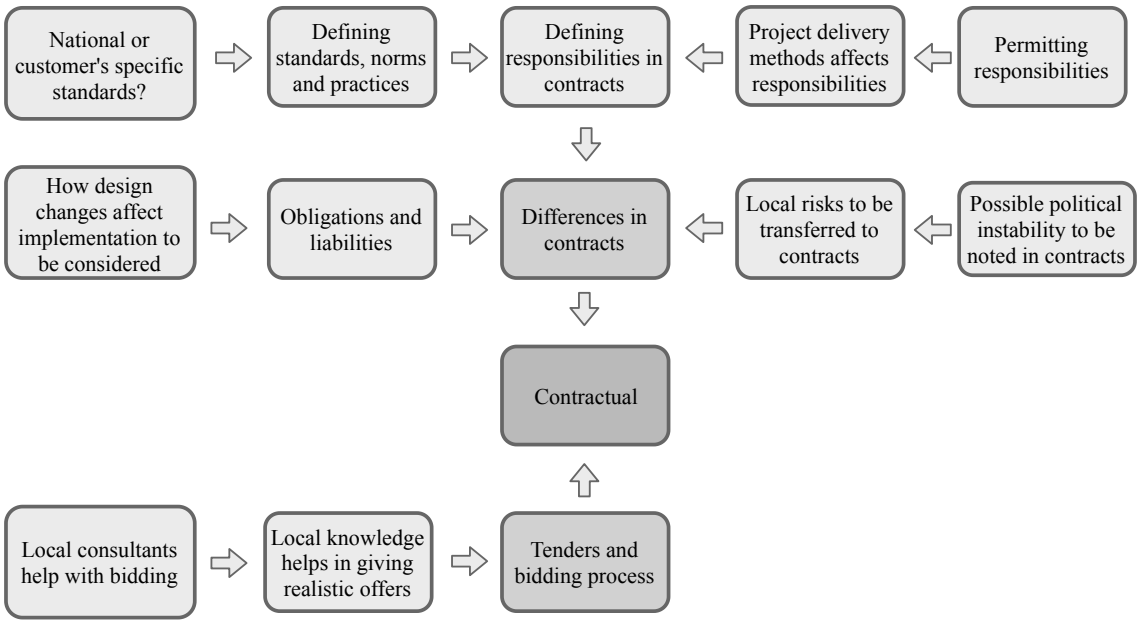

Figure 12. Identified localization elements of contractual.

Appendix 4. Identified localization elements of cultural differences.

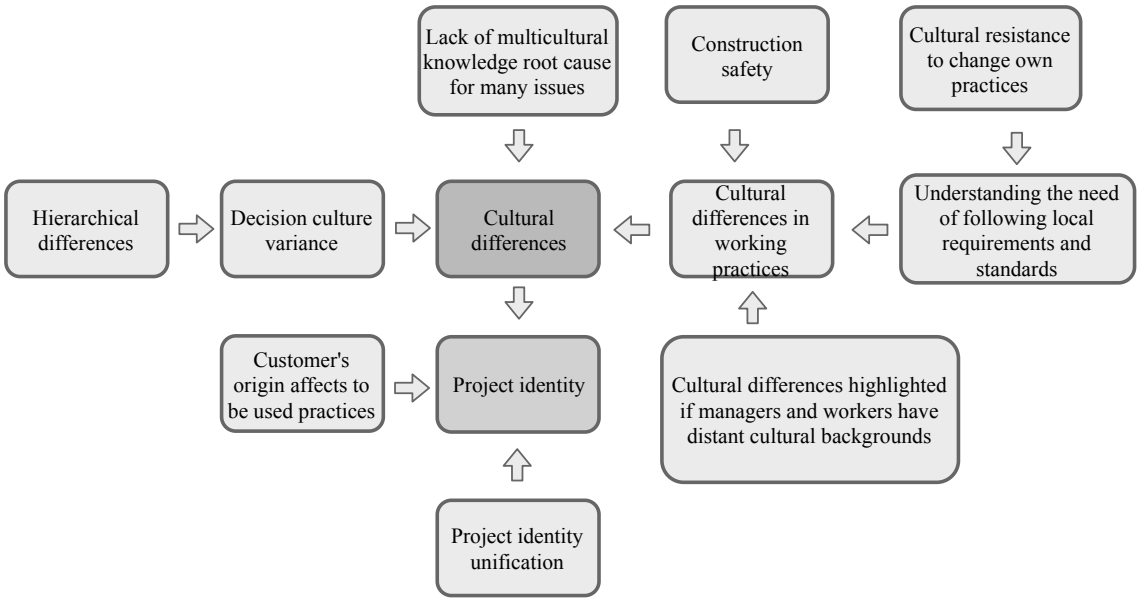

Figure 13. Identified localization elements of cultural differences.

Appendix 5. Identified localization elements of facilitating inbound personnel.

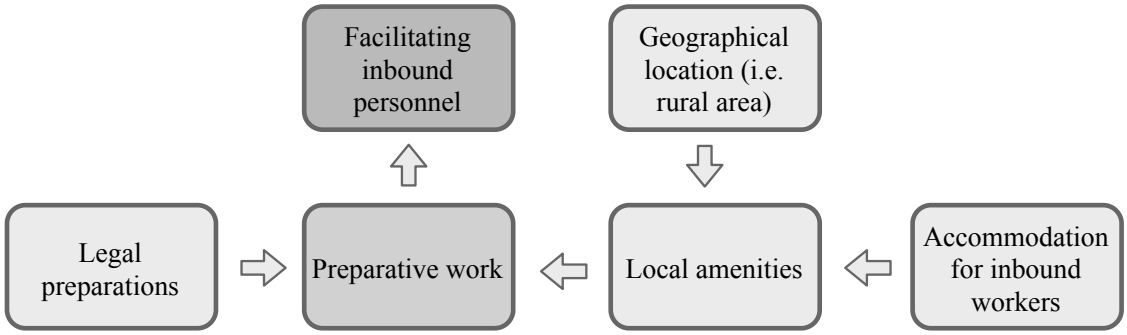

Figure 14. Identified localization elements of facilitating inbound personnel.

Appendix 6. Identified localization elements of geographical location.

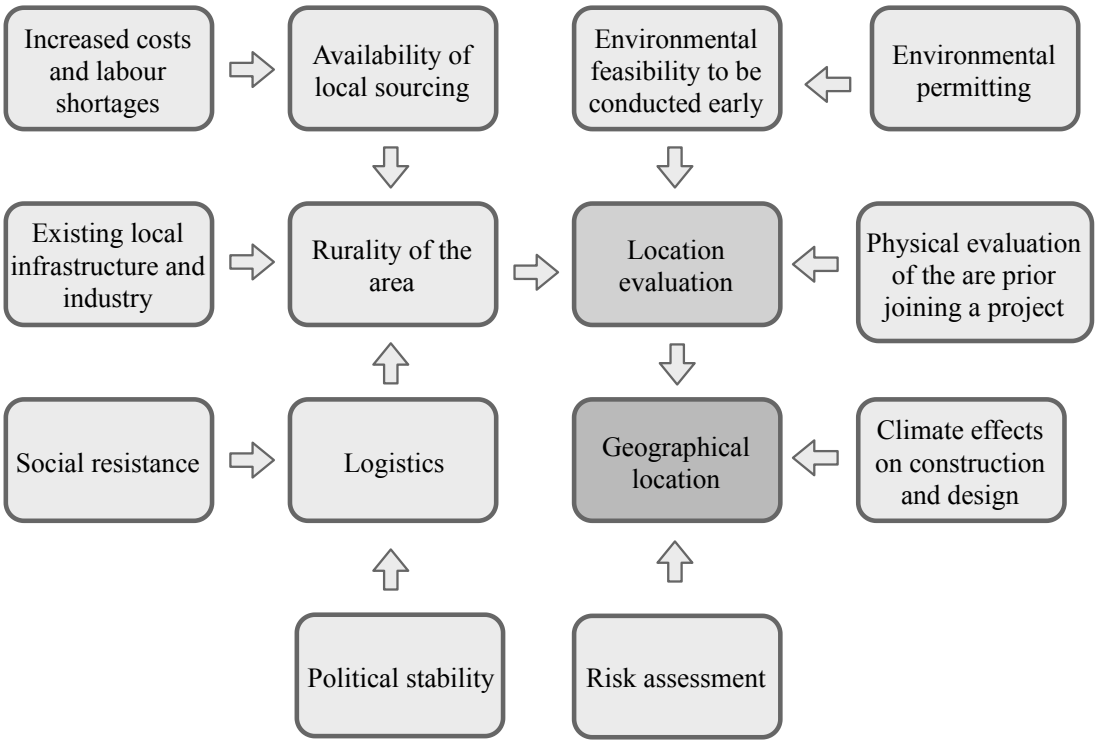

Figure 15. Identified localization elements of geographical location.

Appendix 7. Identified localization elements of legal regulations.

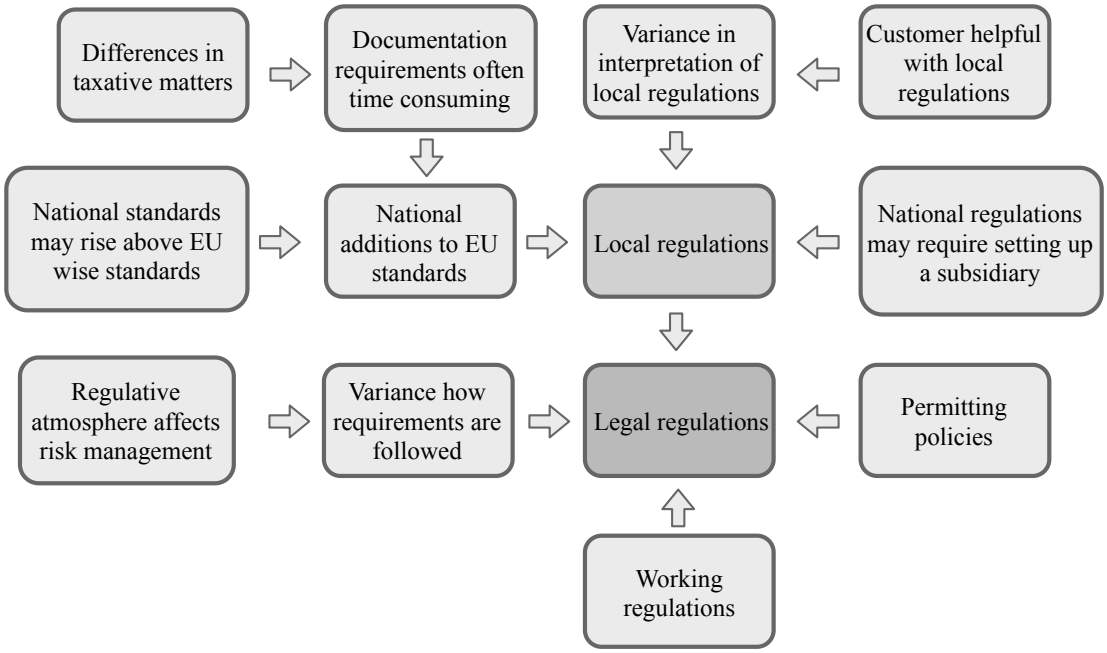

Figure 16. Identified localization elements of legal regulations.

Appendix 8. Identified localization elements of local knowledge acquirement.

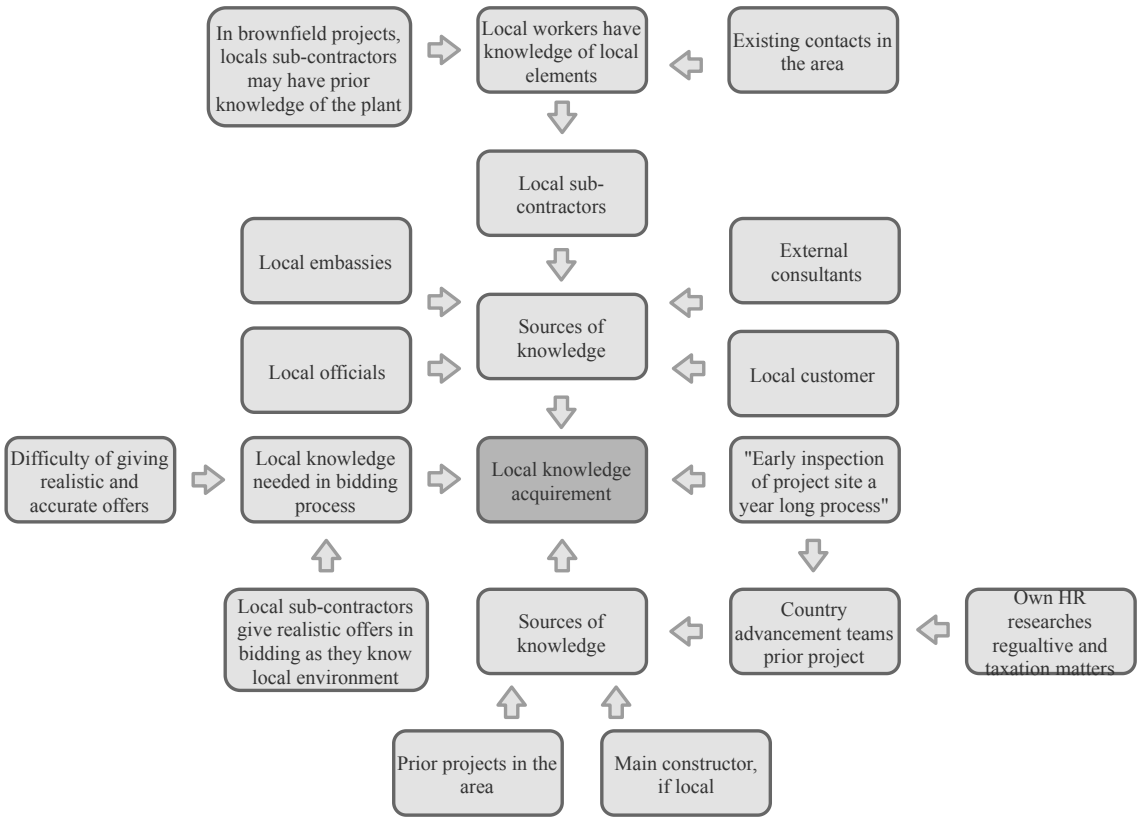

Figure 17. Identified localization elements of local knowledge acquirement.

Appendix 9. Identified localization elements of local resistance.

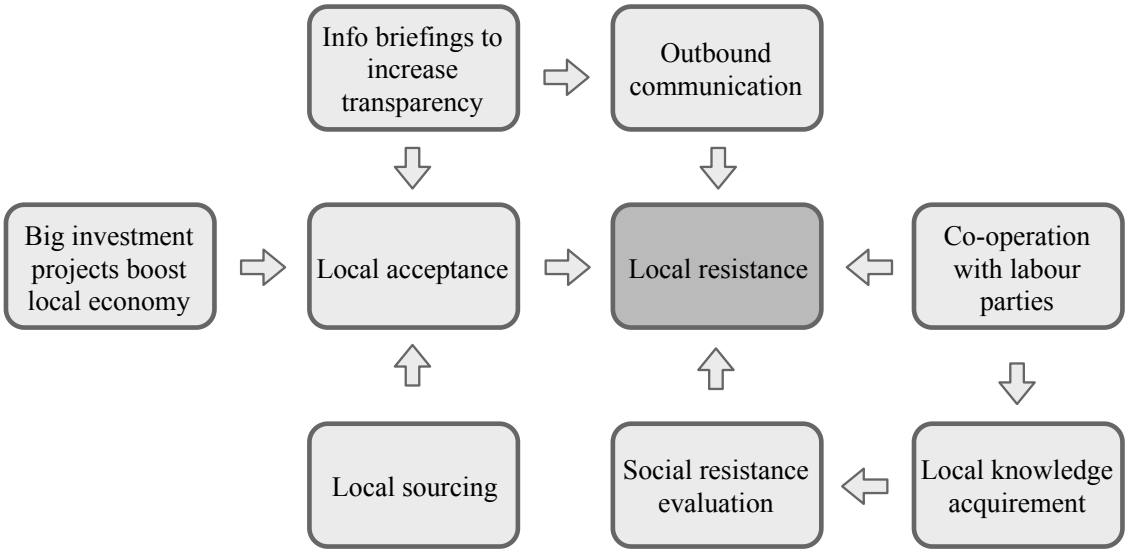

Figure 18. Identified localization elements of local resistance.

Appendix 10. Identified localization elements of local sourcing.

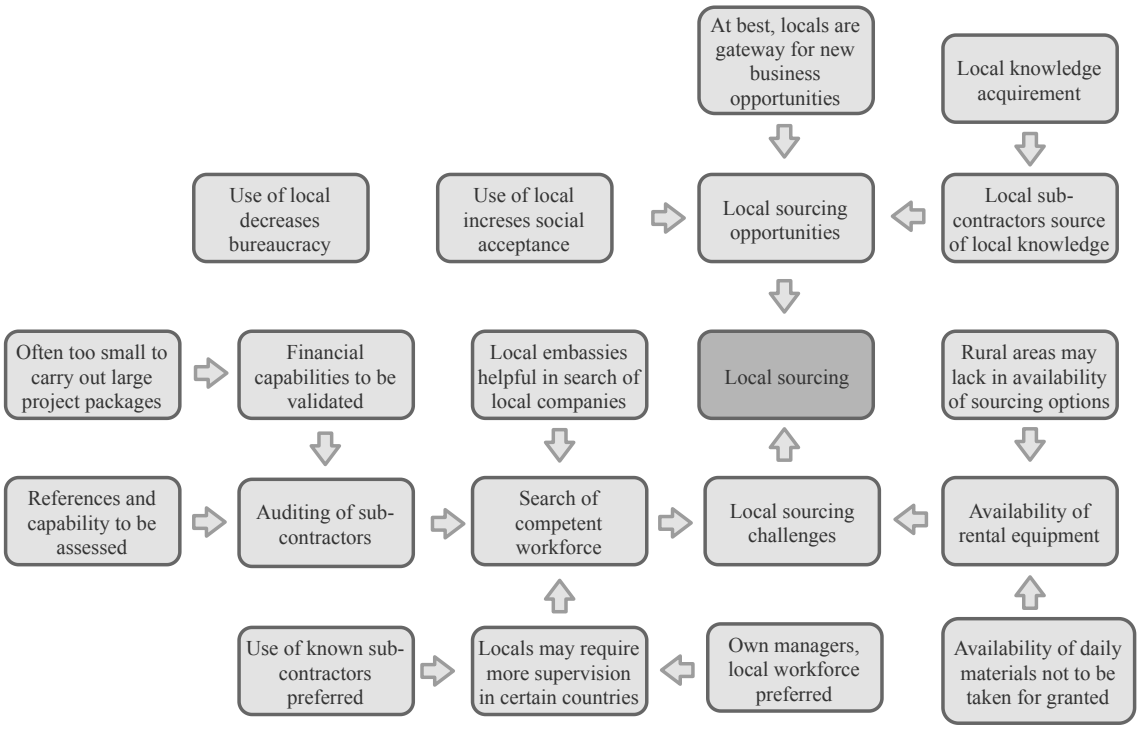

Figure 19. Identified localization elements of local sourcing.

Appendix 11. Identified localization elements of logistics.

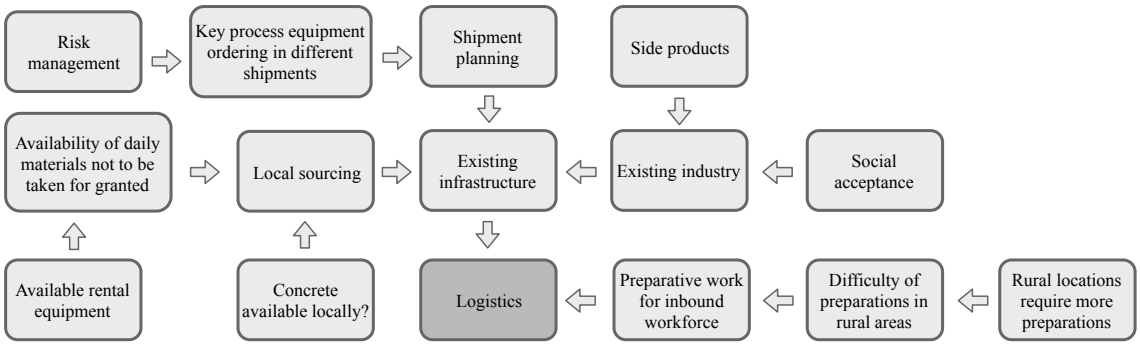

Figure 20. Identified localization elements of logistics.

Appendix 12. Identified localization elements of management.

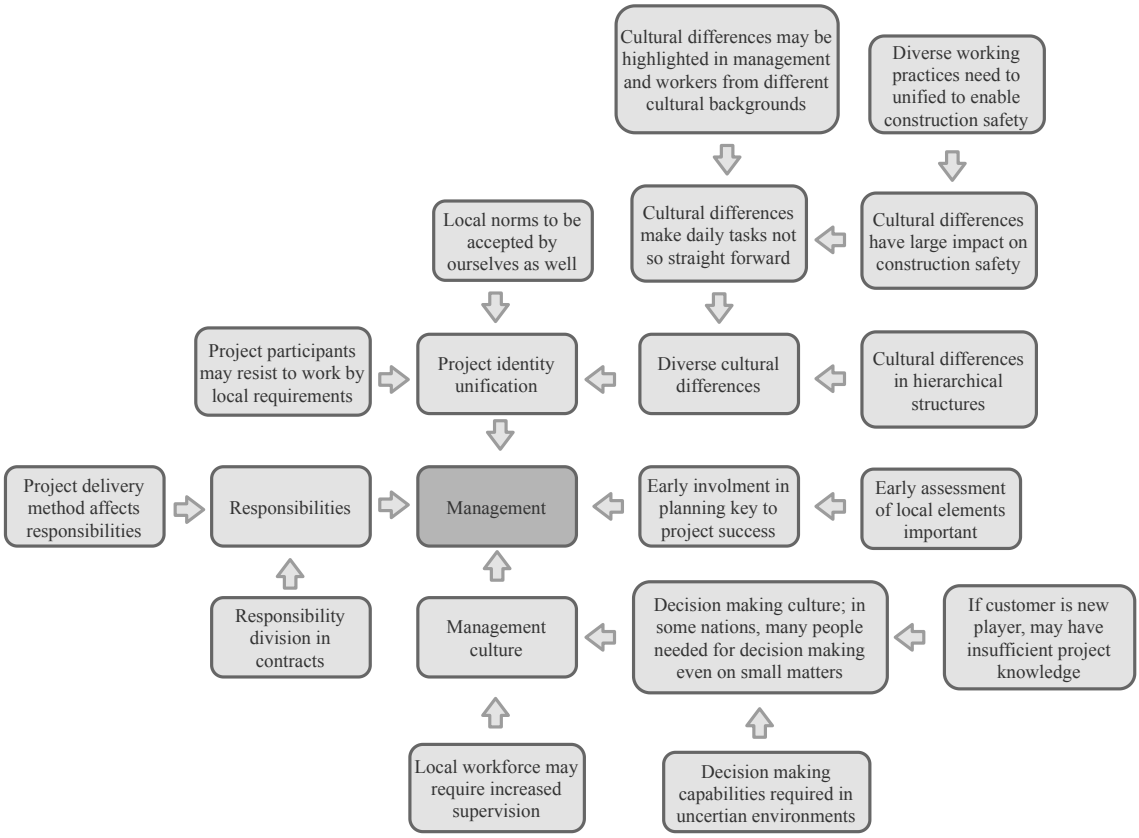

Figure 21. Identified localization elements of management.

Appendix 13. Identified localization elements of permitting.

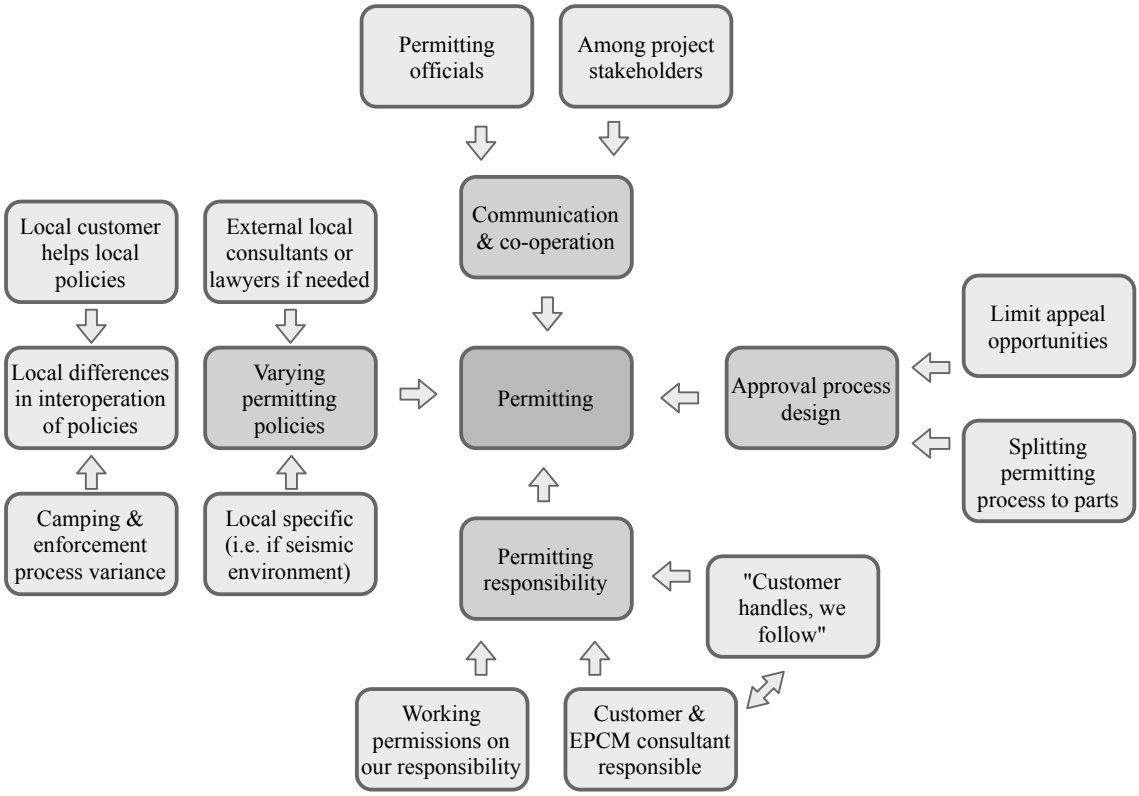

Figure 22. Identified localization elements of permitting.

Appendix 14. Identified localization elements of political stability.

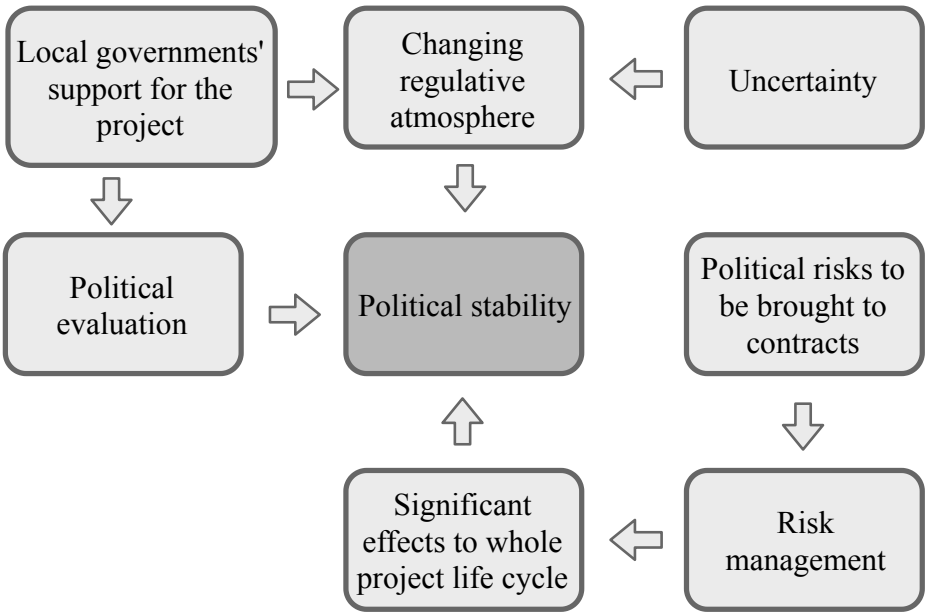

Figure 23. Identified localization elements of political stability.

Appendix 15. Identified localization elements of risk management.

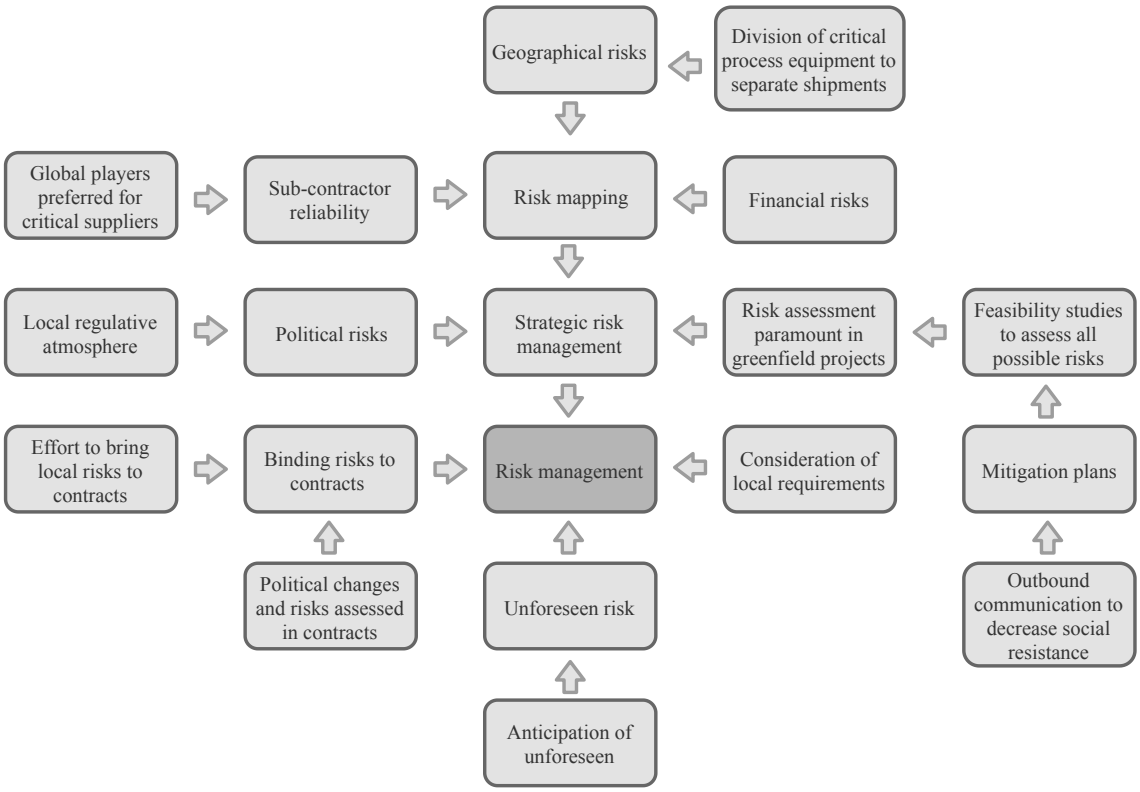

Figure 24. Identified localization elements of risk management.

Appendix 16. Identified localization elements of sub-contracting.

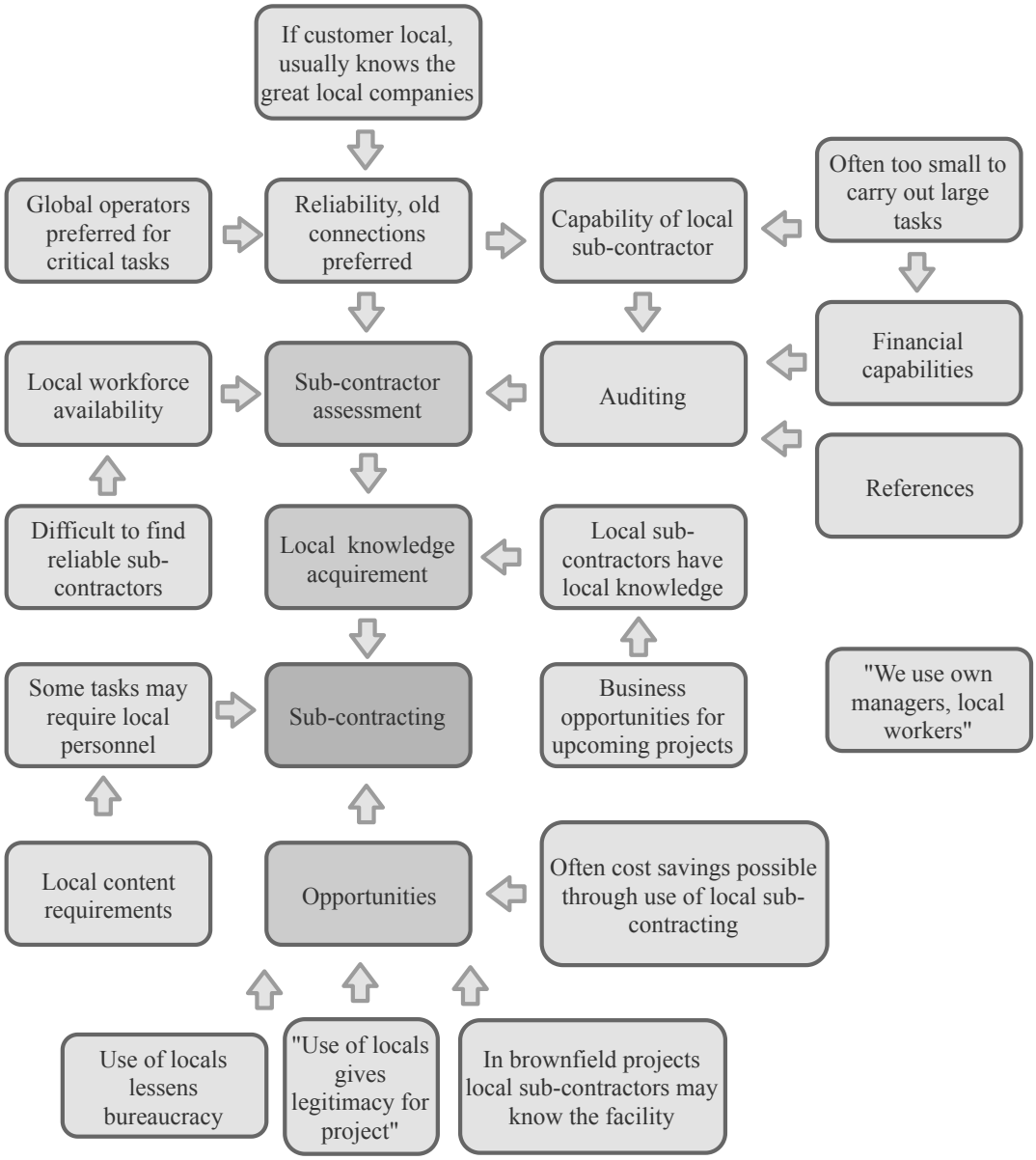

Figure 25. Identified localization elements of sub-contracting.

Appendix 17. Identified localization elements of uncertainty.

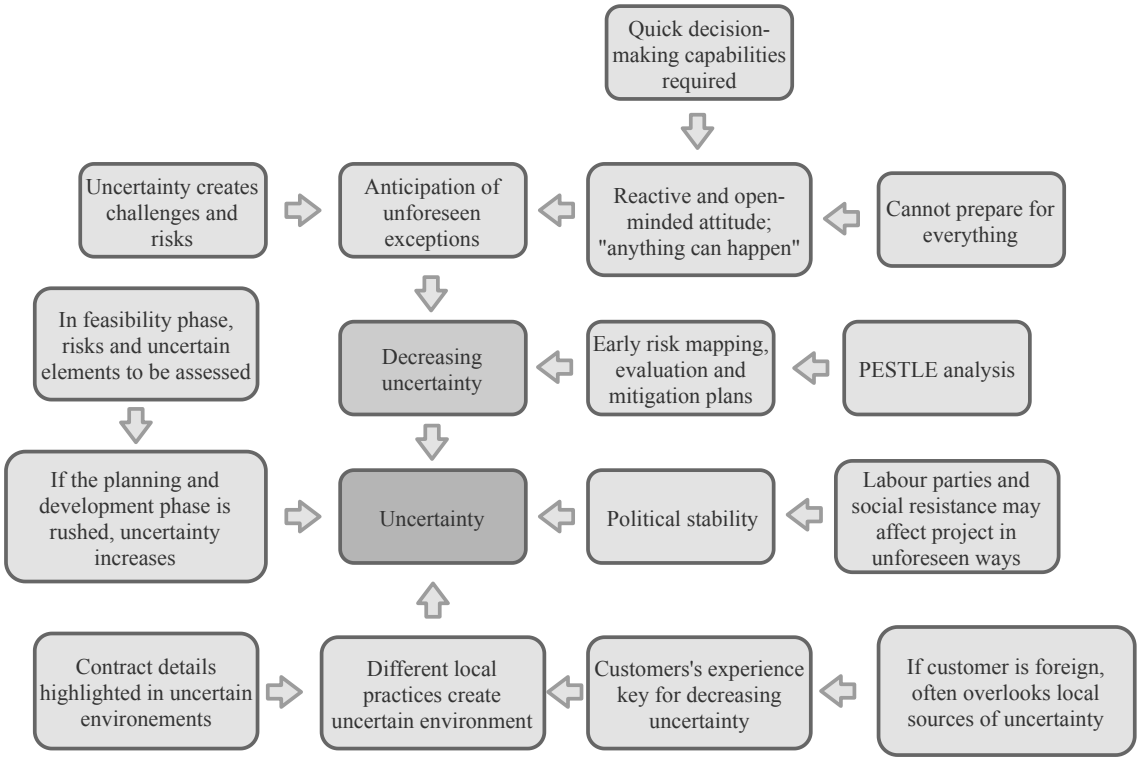

Figure 26. Identified localization elements of uncertainty.

Appendix 18. Identified localization elements of working regulations.

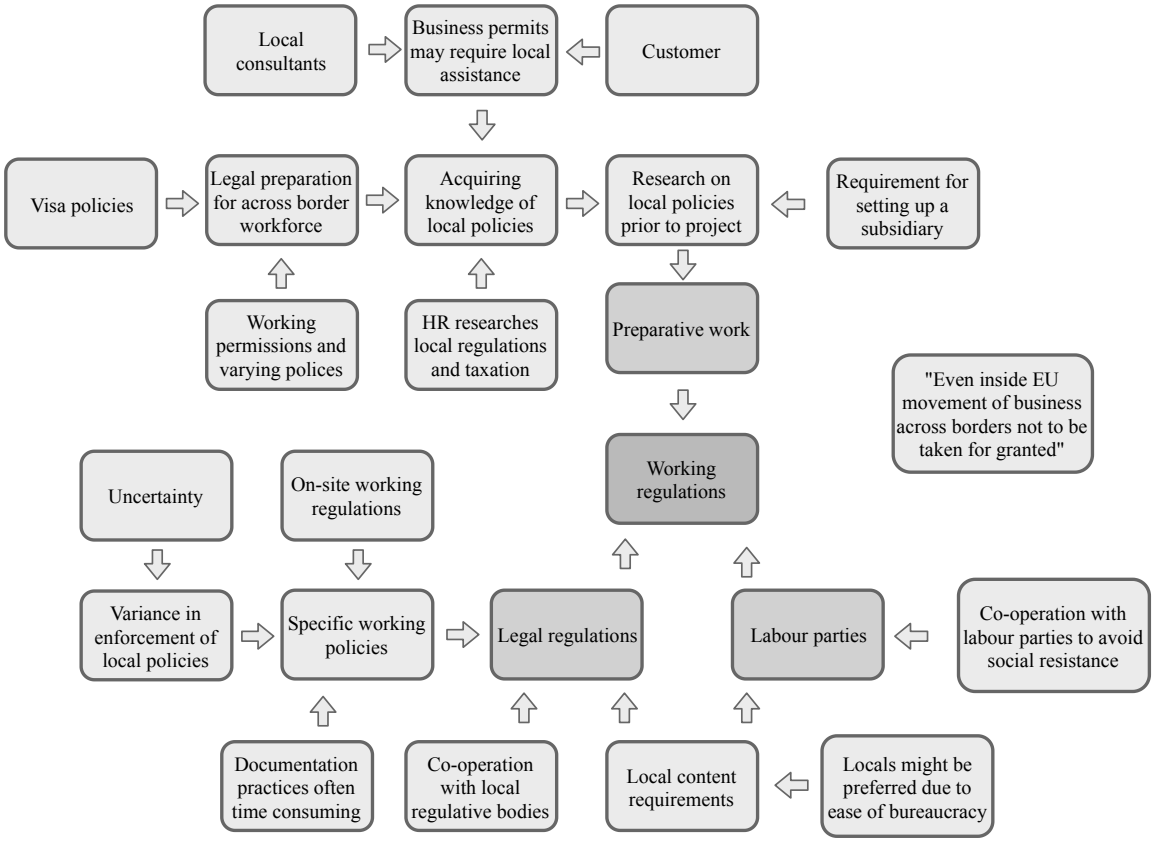

Figure 27. Identified localization elements of working regulations.